



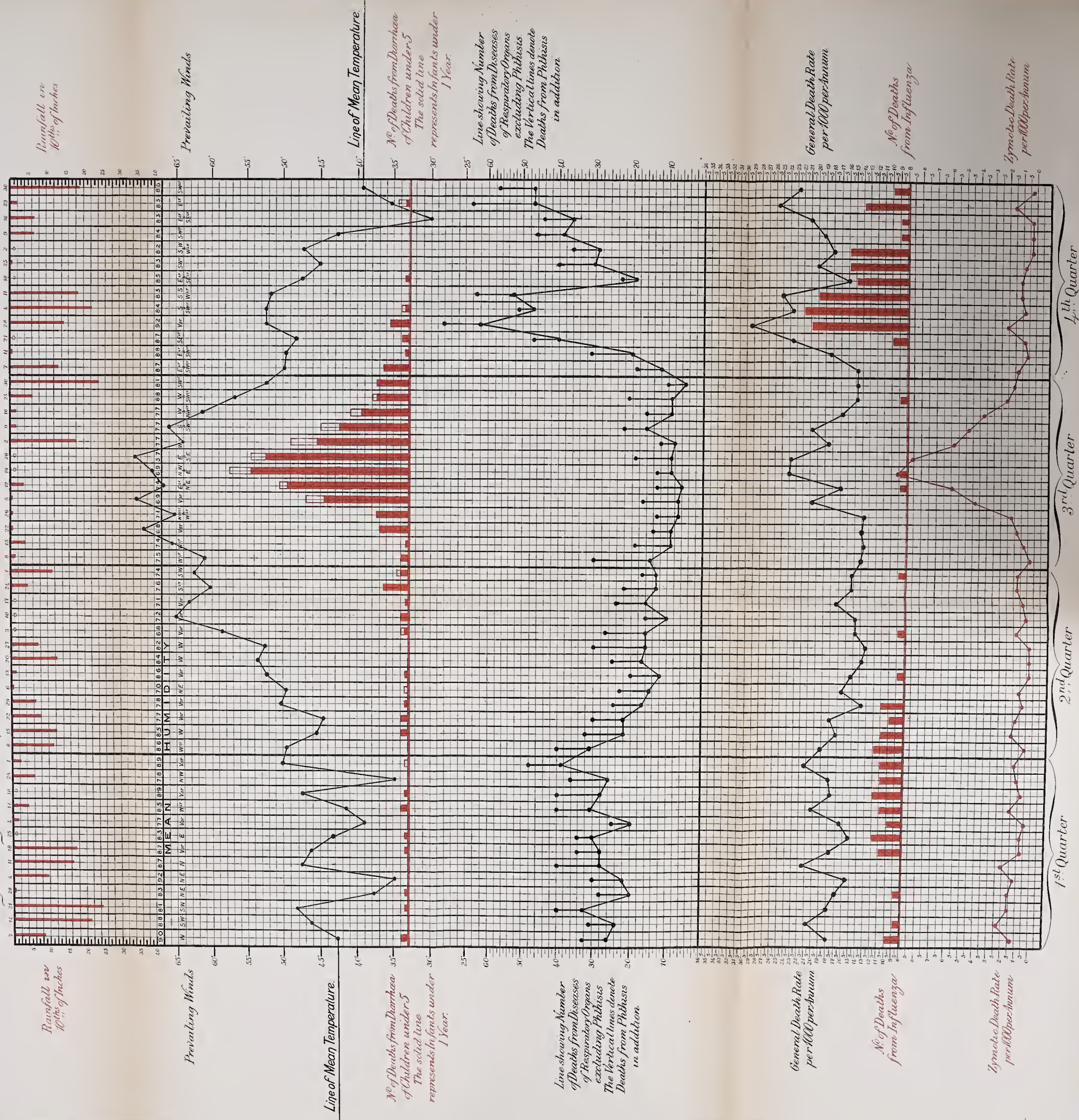


# Foot

Showing Mean Temperature, Rainfall, relative Humidity (saturation=400) prevailing Winds, also Number of Deaths returned from Diseases of Respiratory Organs excluding Phthisis, from Phthisis from Diarrhoea and from Influenza, the General Death Rate and the Zymotic Death Rate in the Bristol Sanitary District for each Week of the Year 1899

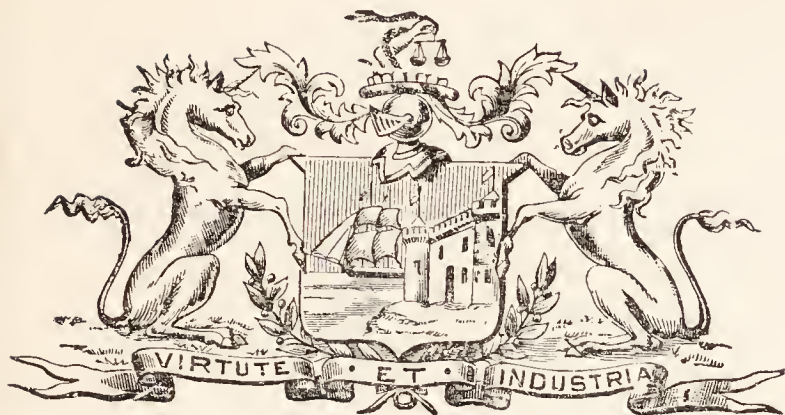
## Week Ending

18 Enslaving  
 January February March April May June July August September October November December





1899.



CITY AND COUNTY OF BRISTOL.

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# ANNUAL REPORT

OF THE

*Medical Officer of Health.*

—:O:—

*Printed by order of the Health Committee.*

—:O:—

BRISTOL:

BENNETT BROTHERS, LD., PRINTERS, COUNTERSLIP

—  
1900



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# HEALTH COMMITTEE.

1899-1900.

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*The Lord Mayor :*

The Right Hon. Sir HERBERT ASHMAN.

*Chairman :*

Councillor F. GILMORE BARNETT.

*Deputy-Chairman :*

Councillor COLSTON WINTLE.

Alderman HALL.

„ THATCHER.

„ WATHEN.

Councillor HENRY ANSTEY.

„ W. BASTER.

„ JOHN COOLE.

„ H. F. COTTERELL.

Councillor A. J. HARRIS.

„ WM. JENNINGS.

„ FRANK MOORE.

„ CHAS. NEWTH.

„ SAML. SHIRLEY.

„ E. J. TUCKER.

# CITY OF BRISTOL.

## HEALTH DEPARTMENT, 1899.

*Medical Officer of Health* : D. S. DAVIES, M.D., D.P.H.

*Deputy-Medical Officer of Health* : J. C. HEAVEN, L.R.C.P., D.P.H.

*Resident Medical Officer at Ham Green* : F. P. MACKIE, M.R.C.S., L.R.C.P.

*Visiting Medical Officer at Nover's Hill and St. Philip* :

G. C. PAULI, M.R.C.S.

*Chief Clerk* : E. W. HARRIS.

*Clerk* : R. R. WARREN.

*Junior Clerk* : W. N. BROWN.

*Laboratory Assistant* : E. M. HORLER.

*Chief Inspector* : J. W. KIRLEY.

*Superintendent Inspector* : ‡\*T. LOWTHER.

*District Inspectors (11)* :

	District.			District.	
H. CALCUTT	(Central)	5	*†F. R. SLADE	(St. Paul)	4
G. E. BUSH	(Bedminster)	7	*†A. E. KING	(Knowle)	8
*H. HASELL	(Horfield)	2	*†H. C. LEAT	(S. Geo. W.)	10
*J. WILKINSON	(Clifton)	1	*†T. J. CROFTS	(Easton)	6
*H. J. KIRLEY	(Cotham)	3	*F. KIRLEY	(S. George E.)	11
*J. T. LYONS	(Stapleton)	9			

*Inspector of Common Lodging Houses and Bakehouses.*

\*S. O. DIMOND.

*Inspector of Dairies, Cowsheds and Milkshops :*

\*†E. J. CASELY.

*Inspectors of Slaughter Houses, Meat and Fish :*

S. THOMAS. | \*A. GITSHAM.

*Inspectors of Workshops :*

\*A. W. GRIFFITHS. | \*W. J. WREFORD.

## PORT OF BRISTOL.

*Port Medical Officer of Health* : D. S. DAVIES, M.D., D.P.H.

*Assistant Port M.O.H.* : J. C. HEAVEN, M.R.C.S., D.P.H.

*Chief Inspector* : S. DIMOND.

*Port Inspector* : A. DICKENS.

*Assistant Port Inspector and Boatman* : J. REX.

*Master of "Luath"* : §G. JACKSON.

‡ Surveyor's Certificate, Sanitary Institute.

\* Inspector's Certificate, Sanitary Institute.

+ Registered Plumber.

§ Certificated Pilot for Bristol Channel.



# REPORT.

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## PART 1.

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### **POPULATION, ACREAGE, AND GENERAL SANITARY CONDITION.**

During the year 1898, partly as a result of the Bristol Extension Act, 1897, and partly for Registration purposes, considerable alterations took place in the areas of the Registration Sub-Districts into which the old City was divided, and in the grouping and arrangement of the New Districts. Thus the old Registration Sub-District of Castle Precincts, with a considerable portion of S. Paul has during the year been merged in S. Mary Redcliff; and that of S. James is now included in S. Augustine. Previously, also, in 1897, that portion of the Registration Sub-District of Westbury that was within the Municipal area, was attached to Clifton, to which Avonmouth had been already added by the Extension Act of 1895.\*

As a result of extension also, that portion of the Urban Sanitary District of Horfield which came into the City was added to the portion of the Ashley Registration Sub-District already within the City.

S. George and Stapleton were also brought in from the County, and retained their limits and names.

Bedminster has also, for purposes of these statistics, been taken to include the parts of the Somerset Districts added by the Extension Act of 1897, in addition to the old Urban District of Bedminster. These have recently (January, 1899) been re-divided into the two Urban Registration Sub-Districts of Bedminster and Knowle.

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\* Avonmouth (213 acres) is now no longer included in the Registration Sub-district of Clifton, but has been added to Ashley.

Under these circumstances of amalgamation and change, it is difficult to present Table A in its complete form, and, indeed, this will remain imperfect till the forth-coming Census of 1901 puts registration facts and figures once more upon an accurate basis.

Table A.

**Showing Population, Acreage, and Number of Persons per Acre (Density) in each of the Registration Sub-Districts of Bristol for 1891 and 1899.**

Registration Sub-Districts, 1891. (Census Year)	Acreage.	Popula- tion middle of 1891.	Density, 1891.	Registration Sub-District, 1899.	† Acreage	Popula- tion middle of 1899.	Density 1899.
S. Mary Redcliff ...	170	9,287	54·6	S. Mary Redcliff ..	324	15,964	51·7
Castle Precincts ...	119	5,558	46·7	(Including Castle Precincts and part of S. Paul.)			
S. Paul ... ..	148	19,046	128·6	S. Paul ... ..	127	17,342	136·6
S. James ... ..	68	7,817	114·9	}	333	20,941	62·8
S. Augustine ...	250	13,788	55·1				
Bedminster ...	992	45,812	46·1	Bedminster, Knowle, etc. ...	3,031	62,160	20·5
				(Including Somerset added area )			
Clifton ... ..	921	29,361	31·8	Clifton ... ..	1,717	46,869	27·2
				(Including Westbury			
Ashley ... ..	434	24,190	55·7	Ashley ... ..	995	38,921	39·1
				(Including Avonmouth and part of Horfield.)			
S. Philip ... ..	744	51,650	69·6	S. George ... ..	1,846	48,155	26·0
Westbury .. ..	692	15,540	22·4	S. Philip ... ..	736	52,909	71·8
				Stapleton ... ..	2,573	17,650	6·9
Bristol City (1891)	4,538*	222,049	48·93	Bristol City (1899)	11,682	320,911	27·47

\* Ordnance calculation, including water areas.

† Approximate only.



### Water Supply.

The Water Supply is in the hands of a Private Company, and is obtained by gravitation from springs in the triassic conglomerates, and in the carboniferous limestone on the sides of the Mendips, at points from 5 to 16 miles from the City. The water from two of these springs (Sherborne and Coldbath) is brought directly into the City; that from the other springs is intercepted by the storage reservoirs at Barrow Gurney, 310 feet above Ordnance datum, with a present holding capacity of 750,000,000 gallons, whence it is brought into the City, joining the direct supplies at Redcliff. The combined waters supply the lower parts of the City *en route*, and also rise by gravitation to the pumping Station and reservoir at Oakfield Road (200 feet above O.D.), from which they are pumped up to the Durdham Down service Reservoir (320 feet above O.D.) for the supply of Clifton and the higher parts of the City.

A supplementary supply is obtained from deep wells at Chelvey, eight miles from Bristol, sunk in the new red sandstone (triassic).

The water is supplied to the City at constant service, and the average daily supply per head is calculated at about 22 gallons.

All water supplied from the Barrow Store reservoirs is filtered before delivery.

As to any risk of excremental contamination, the water appears to be above suspicion; and no case of disease has within our knowledge ever been traced to its use.

The Company has power to make an annual charge for each closet flush, in addition to the charges for other domestic purposes (not now enforced in the case of a second W.C. cistern in houses of the gross value of £30 and under), hence very many out-door closets throughout the city are dependent upon hand flushing. After 25th March, 1896, the charge for flushing cisterns in dwelling houses of the gross value of £20 and under, was reduced to one shilling per quarter.

*New Source of Supply.*—In 1888 the Company obtained powers to take the Rickford Spring, near Blagdon, and the Langford Spring, at Langford, subject to reservation of prior claims of the district upon those springs; and in 1889, they obtained powers to make a reservoir by impounding the river Yeo. This reservoir, to contain a maximum of 1,700,000,000 gallons, will receive the water from these combined sources, and from it the water will be lifted to join the storage at Barrow. The source of the Yeo is from deep springs similar to those furnishing the established supply.

### **Analysis of Water Supplied by the Bristol Water Works Company.**

*(Results stated in Grains per Imperial Gallon.)*

	GAUGE HOUSE BARROW. (Unfiltered Water.)	COLD BATH SPRING.	DEEP WELL, CHELVEY.
Colour in 2-ft. Tube...	Greenish Brown	Pale Green	Pale Green
Sediment .....	Sand, Algæ	None	None
Saline Ammonia .....	·001	·0007	·0002
Albuminoid Ammonia	·004	·0020	·0010
Nitrogen as Nitrates	·09	·12	·17
Nitrites.....	None	None	None
Chlorine as Chlorides	·97	·91	1·13
Oxygen absorbed in 4 hours.....	·039	·003	·014
Total dissolved Solids	19·70	23·50	22·54
Lime .....	9·06	11·05	9·88
Magnesia .....	·65	·92	1·18
Sulphuric Anhydride (S.O <sub>3</sub> ).....	·86	·98	·83
Lead, Copper or Zinc	None	None	None
Total Hardness.....	16·0	20·5	20·0
Permanent do. ....	3·5	4·5	5·0

F. WALLIS STODDART, F.I.C., F.C.S.,  
City Analyst.

## **Sewerage Drainage and Excrement Disposal.**

The old City of Bristol is completely sewered, cesspools are not countenanced, and no dry systems of disposal are in use. The aggregate length of the main sewers is about 150 miles, and the cost of construction, commenced in 1851, amounted to about £161,000. The sewers take all storm water, which reaches them by way of trapped street gullies; they are without any external openings or special ventilating outlets, and the manholes are all closed down. Double tidal-valves are fixed at the outlet; these valves are of cast iron, oval or circular, and self-acting, hung on chains, and bedded on indiarubber. In the low level sewers provision has been made for flushing from the Floating Harbour.

Owing to the geographical position of the added Districts the natural outlet for their sewage is through the valley in which Bristol lies.

The S. George Sewer discharges into the tidal river near Totterdown Lock after passing under the Feeder Canal, by an outlet which is close to the S. Philip's Sewer outlet.

The Stapleton and Fishponds Sewer connects to the S. George's system at the junction of the Fishponds and Stapleton Roads.

Horfield discharges a considerable amount of its sewage into the tidal river by way of Cheltenham Road and the Clifton low level sewers. That from the upper part of Horfield is treated at the Ashley Down sewage works, the effluent discharging into the Boiling Wells stream, which finds its way into the Frome and thence into the Floating Harbour.

Part of the Totterdown and Knowle sewage is discharged into the tidal river near Brislington Crescent, Bath Road. The upper part of Knowle is drained into cesspools, but the sewerage of the whole district has been engaging the attention of the Sanitary Committee, since inclusion, with



the view of the complete sewerage of the district and the abolition of the cesspools. The Bedminster Down sewer connects with the Parson Street Sewer and discharges near Clift House into the Avon.

The sewage from the whole City is discharged without treatment into the tidal Avon, and the rapid scour of the tide, which in this Channel is of exceptional force, generally results in the removal of the sewage without offence; although in remarkably dry summers, when fresh water is deficient in the river, some nuisance is complained of.

### **Cleansing, Ashing, and Street Watering.**

This work, formerly carried out by contract, was in November, 1892, taken by the Sanitary Committee into their own hands, under the supervision of the City Engineer, who reports to the Committee. The erection of the Destructor at Albert Road, St. Philip, has led to the discontinuance of the old Refuse Tips, which caused some inconvenience and much complaint. About 650 tons of refuse are destroyed weekly. The present Destructor consumes about half the refuse of the City, the remainder is removed to selected tips outside the city. Additional Destructors will need to be provided shortly, in order to deal with the whole of the material collected.

### **Hospital Accommodation.**

The most pressing need in the City is now, as it has always been, adequate Isolation Hospital accommodation, a need considerably aggravated since the enlargement of the City. The normal allowance for isolation purposes is laid down at 1 bed per 1,000 population. In 1897 there was provided about 1 bed for every 2,000 persons in temporary hospitals, with about one half the proper cubic space.

Recently, 76 beds for fever have been built at Ham Green, but at the same time 56 temporary beds have been put out of use; the nett gain is 20 additional beds.

There is, therefore, now only 1 bed available for every 2,300 persons—*i.e.*, the proportional accommodation is less than before the extension of the City.

The 20 additional beds have to meet the needs of an additional 93,000 persons, and also to provide for all notified Smallpox, Scarlet Fever, Diphtheria, and Enteric Fever, formerly cared for by the Guardians. The position, in the presence of any epidemic would be simply impossible.

In previous years some epidemic pressure has been successfully met, even with insufficient accommodation, but only in regard to Smallpox and Scarlet Fever. Considerable accommodation was then provided by the Guardians, the Public Institutions accepted all the Enteric Fever cases, and Diphtheria was never removed. All this is now changed.

The expenditure of the Health Department has, owing to this outside assistance, always been remarkably low, especially in regard to Hospitals; as shown by the following comparative statement:—

Town.	Population. 1895.	Cost of M.O.H. Department, Disinfection, and Health Inspection.	Maintenance of Hospitals.	Port Sanitary Expenses.	Total.	Equivalent to a Rate of
		£	£	£	£	d.
Liverpool ...	517,980	8,441	16,124	1,433	25,998	2·09
Birmingham	478,113	6,273	18,618	—	24,891	2·95
Leeds ...	367,505	7,366	7,167	—	14,533	2·72
Sheffield ...	324,291	3,363	10,230	—	13,593	3·13
Bristol ...	221,578	4,647	3,354	1,424	9,425	2·22
Bradford ..	261,361	6,051	6,160	—	12,211	2·7
Hull ....	200,044	3,824	5,326	2,069	11,219	4·1

No expenditure upon permanent Hospitals had ever been undertaken until the Sanitary Committee quite recently commenced the erection of buildings upon the Ham Green

and Novers Hill Sites: the first instalment of these was handed over to the Health Committee in 1897, in a partly completed state, for management. The Health Committee have been steadily and carefully organising the work of this instalment, but have as yet had no opportunity of laying out anything upon the necessary extensions.

The City is almost alone amongst the large Towns in its disproportionate Hospital accommodation for the size of its population.

Name of City or Borough.	Population. 1900.	No. of Beds for Fever and Smallpox.	Cost.												
Liverpool ... ..	668,000	450	One Hospital for 88 Beds cost £500 per Bed. (Total, £44,000.)  One Hospital for 40 patients is being extended to accommodate 120, and Land has been purchased for both a Smallpox Hospital and a Convalescent Hospital.												
Manchester .. ...	550,000	436	Fever, £86,764, not including site.  Smallpox, £4,668 (35 Beds), full cubic space. The Corporation are now expending £27,500 at the Fever Hospital on improvements and additions. A Local Government Board enquiry has recently been held for power to borrow £60,000 for a Smallpox Hospital for 120 Beds.												
Leeds ... ..	423,000	540	Plans agreed to.												
Sheffield ... ..	365,000	376	Winter Street, £365 per Bed, including site.												
Bradford ... ..	291,000	251													
Newcastle-on-Tyne ...	234,000	129	Fever Hospital, about £254, full cubic space.												
Salford ... ..	220,000	289	£402 per Bed, including Borough Sanitary Station and Purchase of Land.												
Oldham ... ..	153,000	146	The Fever Beds, £214 per Bed.												
Brighton ... ..	124,000	120	Also Berthon Huts for Smallpox.												
Huddersfield ... ..	104,000	140	About £250 per Bed.												
Cardiff ... ..	185,000	166	Extensions approaching completion. Sanatorium (Fever, &c.)—												
			<table> <tr> <td>Permanent Buildings</td><td>£</td><td>32,903</td><td>£</td></tr> <tr> <td>Extensions ... ..</td><td>£</td><td>19,436</td><td></td></tr> <tr> <td></td><td></td><td>-----</td><td>52,339</td></tr> </table>	Permanent Buildings	£	32,903	£	Extensions ... ..	£	19,436				-----	52,339
Permanent Buildings	£	32,903	£												
Extensions ... ..	£	19,436													
		-----	52,339												
Bristol ... ..	324,000	153	Estimate for 76 Beds, £363. Costs of Wards only per Bed, £159.												



### **Slaughter Houses.**

No decision has been arrived at by the Health Committee as to the provision of Public Slaughter Houses. There are now 124 Private Slaughter Houses in the extended City and 2 belonging to the Docks Committee, one at Hotwells and the other at Avonmouth. There is also one knacker's yard in S. Philip. All the newly included Slaughter Houses have been carefully inspected, and the Private Slaughter Houses generally are regulated and kept in as good condition under the byelaws as is possible considering the defects of position and structure which render a large number of them unsuitable for the purpose.

### **General.**

The watchword of the Health Department has been, as shown above, strict economy,\* which has not been allowed, even with limited isolation accommodation, to check efficiency; but this result has been obtained in the smaller City by personal and peculiar care over details of Notification and disease supervision, and by personal selection of cases to be isolated so as not to overload the Hospitals. The larger City has no additional medical supervision, so that the same close control is impossible, and the City is *pro tanto* less fully guarded against epidemic invasion. The assumption of increased responsibilities in connection with Bacteriological work, now an indispensable but exacting necessity, with Port work, and with routine work over the doubled area, as well as the new and varied duties of Hospital supervision, dilute the possible grasp over disease-work proper. In the smaller City, when invasion of disease began, occasional medical help had to be summoned; in the larger City there is scope for such constant help, so that epidemic outbursts may, as heretofore, be dealt with, economically, at the beginning, rather than wastefully, at their height.

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\* An economy still maintained, as shown by the accounts for 1898-99, wherein it appears that the Health Department work, including City, Port, Disinfecting Station, and Hospitals cost only an amount equivalent to a rate 2·4d. in the £, compared with a rate for a single item, wood paving, of 3·1d. in another account.

## VITAL AND MORTAL STATISTICS.

### Births.

The births registered in Bristol in 1899 were 9,336, of which 256 were returned as illegitimate, a percentage of 2·7.

The birth rate for the year was 29·0, a slight increase on the rate of last year, which was 28·5, the rate has since 1881 shown an almost continuous decrease, interrupted by a slight rise in 1889, and again in 1891, 1893, and 1897 (Table B). The rate for the 33 great towns in 1899 was 30·2.

The excess of births over deaths during the year 1899 (*natural increase of population*) is 3,492. The estimated *actual increase* from 1898 is 4,011; but no estimate of the increase suitable for comparison with that of previous years can be framed, owing to the intervention of extension.

### Marriages.

2,714 Marriages took place within the Borough of Bristol during 1899. The annual marriage rate per 1,000 living is thus 8·4. As the population has recently been altered by extension of the boundaries no comparison with the rates in previous years can be instituted. The area from which marriages are returned has not previously coincided with the Borough of Bristol and consequently the marriage rate has never before been quite definitely ascertained. The adjustment of the Poor Law and Registration areas has amended this.

### Deaths.

5,844 Deaths were registered in the District during the 52 weeks ending the 30th December, 1899, of which 111 or 1·89 per cent. were returned as deaths of illegitimate children. The general death rate for the year, uncorrected for age and sex distribution, is 18·21 per thousand living,† compared with the rate of 17·17 for the year 1898.

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† As various towns differ much in the sex and age distribution of their population, it is obvious that a town containing a too large proportion of very young or of very old persons, or of males, amongst which classes the death-rate is almost invariably in excess, will compare unfavourably with another town in which the distribution of the population is nearer the average, although the death-rates of each successive age period might be precisely similar in the two towns. A correction factor is supplied by the Registrar-General, by which the disparity of age and sex distribution is equalised for the great towns. The factor for Bristol is 1·0379, and multiplying the observed death-rate by this factor, the corrected rate, which is now comparable with the corrected rates for other towns, is 18·9.



### Infant Mortality.

Of the 5,844 Deaths, 1,467 were of infants under one year. The proportion of these deaths to every 1,000 births (Infant mortality) was 157·13, which, with the exception of the rate 164·55 in 1898, is the highest infant mortality rate recorded in the City for twenty years. The increase was due to the fatal prevalence of Measles (*q.v.*) in the early part of the year, and of Diarrhœa in the autumn. A similar rise, amounting to a rate of 11 per 1,000 above the 10 years' average, was recorded in the 33 large towns of England and Wales.

This rate varied thus:—

196·2 in Redcliff.
184·8 in St. Paul.
171·1 in Bedminster.
169·6 in St. Philip.
155·8 in S. George.
154·0 in St. Augustine.
126·8 in Knowle.
125·9 in Clifton.
122·7 in Ashley.
118·8 in Stapleton.

In Table **B** will be seen the annual infant rates in Bristol for the past 23 years. During the year 1899 the infant mortality ranged in the large towns from 269 in Burnley, 255 in Preston, 210 in Nottingham, 209 in Salford, and 206 in Manchester to 159 in Halifax, 158 in Bristol, 154 in Croydon, and 152 in Huddersfield.

### Mortality at Ages between 1 and 60.

2,596 Deaths were returned, corresponding to an annual rate of mortality per 1,000 living between these ages of 8·9 compared with a rate of 8·7 in 1898. The rate for the 33 great towns between these ages was 10·2 in 1898, and 10·9 in 1899.

### Mortality amongst Aged People.

1,781 Deaths of persons aged 60 and upwards were registered, whose ages averaged 72 years and 10 months. The rate of mortality amongst persons living at these ages was in Bristol 78·2, compared with a rate of 65·1 in 1898, and for the 33 great towns was 71·2 in 1898, and 80·0 in 1899.



**VACCINATION.**

The 1898 returns are the last complete ones available, I am indebted to the Clerk of the Bristol Union for the following information :

	BRISTOL UNION.
<i>Vaccination.</i>	
Number successfully vaccinated up to 31st January, 1900.....	3,698
Insusceptible.....	26
Died unvaccinated .....	1,059
Postponed by Medical Certificate	278
Certificates of Conscientious Objection .....	269
Removed to Districts, the Vaccination Officer of which has been duly apprised .....	269
Cases left and not traceable.....	1,924
In abeyance .. .....	1,597
Births registered in 1898 .....	9,120
Percentage of successful vaccination to births .....	40·55
Ditto England and Wales, 1896	66·0

**PAUPERISM.**

**Bristol Union**—Summary of persons relieved on the following dates: the first named date (1st April, 1898) being the date of the formation of the Union for the City and County of Bristol.

	1st April, 1898.	1st April, 1899.	1st Oct., 1899.	1st April, 1900.
In Workhouse ...	...	2,281	2,167	2,305
In Institutions, &c.	114	116	128	127
In Lunatic Asylums	826	824	824	810
Out-door poor ...	7,796	6,409	6,018	5,847
	<u>11,093</u>	<u>9,630</u>	<u>9,137</u>	<u>9,089</u>
Weekly cost of Out-relief ... ..	£724 6 1	£683 14 11½	£664 12 2½	£644 14 7

## PREVALENCE OF SICKNESS IN 1899.

### Small Pox.

No case of this disease occurred during the year. Two doubtful cases were brought under notice, one in March, the other in August, but proved not to be Small-pox.

This disease caused 145 deaths in the 33 large towns during 1899, of which 141 occurred in Hull, 3 in London, and 1 in Liverpool.

### Cholera—Choleraic Diarrhœa.

No deaths occurred from this disease during 1899, and no case was notified. It is not unusual during the late summer or autumn to have one or two fatal cases of acute Diarrhœa notified under this heading, when it becomes important to exclude the possibility of true imported Cholera.

### Diarrhœa—Infantile Diarrhœa.

The number of Deaths returned as due to Diarrhœal Diseases during the year was 345 (three less than in 1898), of which 275 occurred in children under 1 year of age, 44 at ages 1 to 5, 1 at ages 5 to 25, 7 at ages 25 to 60, and 18 in persons 60 years and upwards.\* These Deaths give a Diarrhœal Death Rate of 1·07 per 1000 living compared with a rate for the 33 great towns of England of 1·21.

The rate this year nearly approaches that of 1898, which was exceptionally high, and exceeded any rate noted in the City before extension for the past 22 years, which is as far back as our accurate records extend. The prevalence of fatal Diarrhœa commenced somewhat earlier than last year, and showed greater proportional incidence upon very young children.

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\* In the Registrar General's Returns, the Bristol Diarrhœa rate is given as 1·1 instead of 1·07: this is due to the somewhat indefinite term "Diarrhœa" leading to occasional error in the Registrar's returns; the local figures are probably nearer the truth.

The climatic conditions favouring Diarrhœa in the summer of 1899 were these :—\*

In July, the weather from the 5th to the close of the month, was brilliantly fine and hot. During this long period the temperature reached or exceeded 70 degrees almost daily, the heat being greatest on the 20th, which proved the hottest day locally for twenty years. After this date the heat moderated for a few days, but the close of the month brought a renewal of intense heat. The mean temperature for the month was over 3 degrees in excess of the average.

During August the extreme heat continued, with fine weather, up to the 24th, when the weather became unsettled. The mean temperature of the month ( $66\cdot7^{\circ}$ ) was over 6 degrees in excess of the average, and it was the warmest month within any recent records, the previous warmest having been in the month of August 1893 with a mean temperature of  $64\cdot8^{\circ}$ .

With the exception of the 28th, 30th and 31st, the temperature daily exceeded  $70^{\circ}$ , and on 15 occasions exceeded  $80^{\circ}$ . The warmest day locally occurred on the 24th, with a mean temperature of  $72\cdot4$ . Over our islands the greatest temperature recorded was over  $90^{\circ}$  in London on the 25th.

In September the fine weather lasted up to the third week, after which it became unsettled. The mean temperature was more than  $1\cdot5^{\circ}$  in excess of the average, but was still more than  $2^{\circ}$  less than in the previous year. The warmest day locally was on the 5th with a mean temperature of  $70\cdot5$ . Over our islands the greatest temperature recorded was  $89^{\circ}$  in London on the 5th.

In October the mean temperature was, for the third year in succession, in excess of the average, although it is much below that of the two preceding Octobers. The warmest day locally occurred on the 27th with a mean temperature of  $58\cdot1^{\circ}$ . Over our islands the greatest temperature recorded was  $71^{\circ}$  at Jersey on the 14th.

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\* From observations recorded by H. H. Harding, Esq., F.R. Met. Soc.



The Diarrhœal Death rate varied thus in the Sub-Districts :—

Sub-District.	Rate per 10,000 living.			
St. George ... ..	...	...	...	15
Bedminster ... ..	...	...	...	14
St. Paul ... ..	...	...	...	13
St. Philip ... ..	...	...	...	12
Stapleton ... ..	...	...	...	10
Knowle ... ..	...	...	...	8
Redcliff ... ..	...	...	...	8
St. Augustine ... ..	...	...	...	8
Ashley ... ..	...	...	...	7
Clifton ... ..	...	...	...	2

### **Diphtheria—Membranous Croup.**

During the 52 weeks of 1899, 197 cases were notified as Diphtheria, and 18 as Membranous Croup, a total of 215 under these two headings.

The number of deaths returned as due to Diphtheria was 29, and to Membranous Croup 4, or a total of 33 under the two headings, giving a case mortality from these causes of 15·3 per cent.

The 33 deaths from Diphtheria and Membranous Croup correspond to a death rate from these causes of 10 per 100,000 living, a decrease upon the rate for 1898, which was 14, and for 1897, which was 15. The average rate for the past 10 years in the City of Bristol before extension, was 13 per 100,000 living.

The Diphtheria rate (including Membranous Croup) for the 33 large towns in 1899 was 40 per 100,000 living, compared with their 10 years' average, 32. The rate for the Clifton Registration Sub-District of Bristol in 1899, was 10 per 100,000 living, the same as for the City.

Early in 1900 the disease showed some signs of increasing activity in Bedminster, which will be dealt with in the report of that year's work.

## LABORATORY WORK ON DIPHTHERIA.

The Bacteriological examination of cultures from suspected throats has been continued through the year, and 319 cases have been examined for Diphtheria, compared with 244 in the previous year.

The technique has been somewhat altered, sterilized swabs alone being now sent out in place of the double tubes containing the swab and nutrient medium, as it was found that the medium at depôts rapidly dried and became worthless, and it is equally convenient to make cultures upon receipt of the inoculated swab at the laboratory. These are made upon nutrient agar and Kanthack's ascitic serum, so that the growth upon varying media can be examined and compared.

Several of the 319 cases were examined more than once, some as many as five times, in order to control the disinfection and release from quarantine of the patient. In this way 485 swabs were dealt with during the year, involving the growth of 970 different cultures, and 1,455 microscopical examinations.

Of the 215 cases of Diphtheria and Membranous Croup NOTIFIED during the year, 142 were submitted to Bacteriological examination. Of these, Diphtheria was found in 109, of which 15 died, and 41 suffered from a very severe form of the disease. We failed to find the bacillus in 33 cases; three of these died, and 10 suffered from more or less marked clinical Diphtheria. The failure to find the bacilli in a certain culture sent for examination may be due to many causes—*e.g.*, a too recent application of disinfectants to the throat; taking swab from the surface rather than the edge of the membrane; failing to reach the membrane through struggling of patient, and so on.

In addition to the *notified* cases which gives a negative result, 177 other cases were examined, on suspicion, but, as no Diphtheria was found, notification was unnecessary.

The remaining 73 notified cases were so marked in their clinical symptoms that no bacteriological examination was asked for. In a fair proportion of cases nasal Diphtheria accompanied the growth in the throat, and the importance of the persistence of Diphtheria in the nasal cavity for long periods (as to which I reported somewhat fully in my 1897 Report) is always kept in mind in determining the relaxation of quarantine in this disease.

Of cases receiving a negative certificate, and entered as not clinically Diphtheria, the subsequent progress of the case showed 83 to be tonsillitis, 4 to be scarlet fever, 1 tuberculosis, 1 Bright's disease, 2 ulcerative stomatitis, 1 purulent conjunctivitis, 1 an aphthous condition of mouth preceding death from cerebral softening, 2 were bronchopneumonia (one with suppurating tonsils), and so on.

The Laboratory work proved useful in the early part of the year, when in 14 cases of sore throat that occurred between February 2nd and March 3rd, which only led to suspicion of Diphtheria, the bacillus was demonstrated to exist in almost pure culture (confirmed by Klein, who showed it to be virulent to guinea pigs), and a number of unsuspected cases which had been existing for two or three weeks were thus brought to light, and found to yield Diphtheria in more or less marked degree. Eleven of these cases had a common milk supply, and special attention was called to this as a possible cause of the outbreak, by the fact that after delivering in one District, where many of the cases had occurred, the milkman's round ended in a house in another District, where a solitary case, followed by death, also occurred; and the patient, I understand, was in this case particularly fond of milk as a drink. No further extension of the disease took place, and nothing wrong amongst the people or the animals at the Farm could be discovered upon a personal visit.

In 16 houses multiple cases of Diphtheria occurred; 13 houses had 2 cases, and 3 houses had 3.



Twenty-seven houses, in which Diphtheria, or Membranous Croop was notified, were found to have various insanitary conditions, and these conditions were duly rectified. Cases were distributed through the months thus:—

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Cases	17	21	31	16	17	14	12	11	15	30	23	17
Deaths	4	2	4	1	2	0	1	1	4	6	5	3

### **Erysipelas.**

During the year 337 cases of Erysipelas were notified, and 13 deaths were returned, compared with 263 cases and 6 deaths in 1898.

The enquiries made into these cases resulted in the discovery of 40 houses where various sanitary defects required attention. I cannot recognise that any special value attaches to the notification of this disease.

### **Puerperal Fever.**

In order to lessen the ambiguity of the term “Puerperal Fever” in the Notification Act, the following memorandum has been issued to Medical Practitioners, and is attached to each Book of Notification Certificates:—

#### **“PUERPERAL FEVER.**

A Committee of the Royal College of Physicians of London has recently endorsed the view that the expression ‘Puerperal Fever’ should be taken to include ‘Septicæmia, Pyæmia, Septic Peritonitis, Septic Metritis,’ and other acute Septic Inflammations in the Pelvis, occurring as the direct result of ‘childbirth.’

The Council of the Obstetrical Society of London suggests the following inclusive definition of the term ‘Puerperal Fever.’ That is:—‘Septicæmia and Pyæmia, including Peritonitis,’ and all ‘cases of acute Pelvic Inflammation occurring in connection with childbirth.’

Issued for the information of Medical Practitioners.”

Thirty six cases of Puerperal Fever were notified, a larger number than in any previous year since 1890. Twenty-two cases proved fatal, also an increase on previous figures. The increase in both instances is very probably apparent only, and due to the effect of the above Memorandum; in previous years there is no doubt that many cases of Puerperal Fever escaped registration under that head, owing to the uncertainty as to the meaning of the term. The value of an authoritative definition has, I think, been very great in the interest of public health.

### Scarlet Fever or Scarlatina.

The number of cases of this disease notified and confirmed during the 52 weeks of 1899 was 697, compared with 382 in 1898, 511 in 1897, 1,352 in 1896, 562 in 1895, 485 in 1894, 1,245 in 1893, with 1,442 in 1892, and with 888 cases in 1891; and the number of deaths returned was 13, compared with 14 in 1898, 18 in 1897, 59 in 1896, 16 in 1895, 16 in 1894, 35 in 1893, 47 in 1892, and 37 in 1891.

It will be noticed that although the cases notified are nearly twice as many, the deaths from this disease are actually less than in 1898, and recently Hospital Isolation has been much more generally accepted.

The percentage of deaths to cases in the whole City was 1·8, compared with a case mortality of 3·6 in 1898, 3·5 in 1897, 4·3 in 1896, 2·8 in 1895, of 3·2 in 1894, of 2·8 in 1893, of 3·2 in 1882, and of 4·1 in 1891. This diminution in the fatality of the disease is entirely satisfactory. The distribution of attacks by age is shown below :—

Under 5 years	...	...	...	185
5-10	,	...	...	336
10-15	„	...	...	115
15	„	...	...	61
				<hr/>
				697

The notification figures for the four quarters are as follow :—

1st quarter	...	...	...	...	133
2nd „	...	...	...	...	125
3rd „	...	...	...	...	153
4th „	...	...	...	...	286
Total					697

The distribution of cases in Registration Sub-Districts is shewn in Notification Table  $\beta$ .

It will be seen from Table C that the actual number of deaths, 13, is the smallest number recorded from this disease in any of the past 24 years, although the City has been increased in 1897 by 80,000 persons.

While it is scarcely to be expected that this favourable condition can be entirely maintained, it is to be hoped that the figures of the next epidemic wave will show the marked diminution noticeable of late years, and due no doubt in great part to the extension of Hospital Isolation, and supervision of infected dwellings and of schools.

Since 1877 the Scarlet Fever rate has consistently remained below the mean, and it is at least suggestive that during this period, and especially since 1889, when the Notification Act first gave us accurate information as to the location of disease, systematic isolation of Scarlet Fever has been commenced and extended so far as has been possible with the insufficient Hospitals at our command.

As I have pointed out in another place, the insufficiency is now, with an increased City and increased responsibility in regard to care of the Guardians' cases, more marked than ever, and has barely sufficed, by pressing the fortunately unoccupied Novers Hill (Smallpox) buildings into service, for the modified epidemic prevalence of 1899. Should any serious epidemic threaten, especially if Smallpox intervenes, the Hospital accommodation must, as at present constituted, collapse altogether.



It is now difficult to realise the frightful mortality from Scarlet Fever in former epidemic years, a mortality chiefly incident upon children. Thus in 1863 no less than 925 deaths occurred from Scarlet Fever alone, and again in 1870 this disease killed 746, and large and fatal epidemics recurred with fair regularity every 5 to 7 years. The fatality of individual epidemics has decreased of late years, and in 1887, the last marked epidemic year, the deaths numbered 217. For the past ten years (1890-1899 inclusive) the yearly number of deaths from this disease has averaged 29·5.

### **Typhus Fever.**

No case of Typhus Fever was reported in the City during the year. The last known cases of this disease occurred in the winter 1889-90, the disease was strictly localised to a small group of houses and resulted in 5 cases and 1 death (*See Report for 1889*).

### **Enteric Fever.**

During the year 219 cases were notified as Enteric Fever compared with 113 in 1898, 343 in 1897, 110 in 1896, 89 in 1895, 90 in 1894, and 122 in 1893.

The prevalence and fatality of the disease in each quarter of the year is shown here.

	CASES.				DEATHS.			
	1896	1897	1898	1899	1896	1897	1898	1899
1st Quarter ...	34	20	34	36	3	3	8	9
2nd Quarter ...	34	17	12	26	8	5	2	6
3rd Quarter ...	21	38	29	59	2	5	6	9
4th Quarter ...	21	268	38	98	7	34	10	11
	110	343	113	219	20	47	26	35

This table shows the Notifications and deaths for the past ten years.

Years.	Cases Notified.	Attacks per 100,000 Living.	Deaths.	Deaths per 100,000. Living.
1890	122	55	33	15
1891	116	52	23	10
1892	135	60	18	8
1893	122	54	26	11
1894	90	39	21	10
1895	89	39	22	9
1896	110	47	20	8
1897*	343	147	47	20
1898†	113	35	26	8
1899	219	68	35	10

Enteric Fever is admitted into the Public Institutions and into the Guardians' Hospitals for treatment, and 116 cases (18 from outside the city) were nursed in the Royal Infirmary, General Hospital, and Children's Hospital during the year, 21 cases were nursed at Ham Green, and 2 were treated by the Guardians.

With the exception of the 12 cases nursed at Clift House in 1897, this disease has not been received into the City Isolation Hospitals until the opening of Ham Green Hospital in July, 1899. The nursing of this disease and of Diphtheria in the City Hospitals adds to the strain upon the accommodation, especially as the Sanitary Authority now undertakes the isolation of notified cases for the Guardians, and for the Rural District of Long Ashton. Urgent need exists for additional accommodation, lest at the first real epidemic pressure, the whole of the isolation arrangements for the City should break down.

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\* The excess in 1897 was due to the Milk-borne outbreak in Clifton of September–November, which gave rise to 244 cases and 30 deaths.

† City enlarged from 232,242 to 316,900.

### **Enteric Fever in St. Philip's Marsh.**

The most notable occurrence of Enteric Fever was the outbreak in this district, which furnished in many ways an instructive contrast to the Milk-borne outbreak of 1897.

Between the 17th and 25th November, 11 cases of Enteric Fever were notified in St. Philip's Marsh (a working-class district in Bristol) within a limited area, shown on the accompanying map. A group of 4 cases had been dealt with in September and October, but after October 25th nothing further was notified until November 17th, on which date some blood from a suspicious case of "fever" was submitted to the Widal reaction in the Laboratory, and gave a decided reaction confirmatory of Enteric fever.

By the further application of this test we were able, with the co-operation of Dr. Phillips, who is in Medical charge of this district for the Bristol Dispensary, to separate out the remaining cases (one as early as the fourth day of the illness), and thus speedily established a position which enabled some hypothesis as to causation to be entertained. The total number of cases in this small area from September 27th to November 25th amounted to 16; 4 cases and 3 deaths occurred in one house within a week (Nov. 17—24) so that the outbreak was sufficiently serious, and the variety sufficiently virulent. Some delay in hearing of cases occurred through the concurrent prevalence of "Influenza" in the district, but when suspicion was once aroused, bacteriological methods speedily and with marked accuracy differentiated the cases.

Although most of the infected houses received milk supply from the same retailer, whose round happened to run through this district, milk was readily eliminated as a cause; for other districts outside this particular area, on the same milk round, remained uniformly and absolutely unaffected.





Enteric Fever in St. Philip's Marsh, Bristol, 1899.



Water was similarly put out of the question ; and, as the soil in this locality is impregnated with sulphur from the barilla waste of which the surface soil is largely composed ; no wells, by good fortune, exist here, a circumstance which may in part account for the immunity from any prevalence of Enteric fever generally enjoyed in this district.

This impregnation of the soil with sulphur will, I should imagine, combat any tendency to the establishment of permanent endemicity of Enteric fever through soil infection.

The slow sequence of cases also negatived milk or water transmission, and, as personal communication has not been generally considered to be a strong factor in the spread of this fever ; though as a possible factor under careless conditions of nursing, visiting, and interchange of bedding or clothing, it has to be reckoned with ; I at first accepted, as an interim working basis, the conclusion that the disease had in its spread from house to house followed directly along the line of sewer, a possibility to be borne in mind, but in my experience in this City the rarest possible cause of any considerable spread of Enteric fever.

Upon the first suspicion of this possibility, the Chief Inspector was entrusted with the disinfection and flushing of *every* house drain in the affected area, in addition to the usual disinfection of the drains of actually infected houses ; and the assistance of the City Engineer was secured in order to open up and ascertain the condition of the sewers in the district.

The District of St. Philip's Marsh is very flat, and the fall possible to secure in the sewers is, therefore, comparatively small. The area comprising ten streets mapped out by the fever was found, upon examination, to be similarly mapped out upon the Sewerage Plans, forming, as it were, an isolated lobule with its collecting sewers, communicating by an efferent sewer through Small Street with the main sewer in the Feeder Road.

The sewers are chiefly of brick, were constructed many years ago, and many of them join at right angles.

In these ten streets there are many dead ends, not one of which is furnished with any flushing tank. On examination, considerable deposit was found in all these sewers, a condition much aggravated towards the dead ends. Flushing carts and workmen were at once supplied, under the direction of the District Surveyor, to secure the cleansing of the sewers, the District Inspector seeing to the due supply of disinfectants during the progress of the work.

On the 23rd November, an additional Inspector and two labourers were drafted to the District, and assisted in thorough flushing and disinfection of all house drains.

Meanwhile the incidence of the disease and the argument for causation was being carefully followed up. If the sewers were a true cause of all the cases, these should be absolutely limited to houses on this section of the sewerage scheme ; cases, with one exception, were so limited ; secondly, the sequence of cases from house to house should follow ready lines of sewer communication. In one particular instance an unsuspected junction was found to exist connecting houses sequentially affected, and this seemed to lend support to the theory of sewer carried infection.

Care was taken to secure the immediate removal of all cases to Hospital, as soon as the Widal reaction showed suspicious " fever " to be Enteric, and to enforce adequate disinfection. The last case was notified on 22nd December, making a total of 25. No deaths occurred beyond the three previous noted, which all occurred in one house, before the actual nature of the outbreak had been established.

This was a satisfactory result, especially as, from the circumstances, it appeared possible that the infection might get entrenched in the soil, and, becoming endemic, give rise to some difficulty in its eradication.



Upon the attention of the City Engineer being called to the matter, he at once gave very careful attention to the district and reported to the Sanitary Committee. In his report he pointed out:—

- 1.—That, with the exception of one sewer, recently reconstructed, all were laid by the ground-landlords thirty or forty years ago.
- 2.—In several cases a considerable amount of deposit had taken place from the following causes:—

Faulty connections between house drains and sewers, and deposits brought by rats from such faulty connections.

In some cases bad and irregular gradients.

The unnecessarily large size of some of the sewers, causing them to become sewers of deposit through insufficient flushing.

Decay of bricks in several of the old sewers.

Impossibility of periodical inspection through sealing down of the manholes.

- 3.—The district is self-contained and cannot be extended, no less than twelve dead ends are present in this small area, so that the normal flush is insufficient, and any artificial form of flushing would be ineffective in the capacious brick culverts with rough inverts.
- 4.—Sixty-one street gullies convey the surface water from the streets to the sewer. Of these, thirty-five were provided with built-up stone “ejects,” which were frequently imperfect, allowing escape of sewer gas into the street.

In his recommendations the City Engineer advised the replacement of the imperfect brick sewers by glazed stoneware pipes of proper size and with improved gradient, reconstruction of manholes with removable covers, and reconstruction of street gullies with proper glazed stoneware syphons. These recommendations were approved by the Sanitary Committee, and the work is in hand.

The condition of the sewers undoubtedly justifies the extensive repairs and improvements undertaken; but further enquiry into the circumstances of the outbreak make it very probable that I was entirely at fault in ascribing the spread of Enteric fever in this limited area to any sewer influence.

Although personal infection is rare in Enteric fever under conditions of proper care and adequate nursing, it is quite otherwise where these conditions do not exist, and it will sometimes spread amongst members of a family in a manner recalling the infectivity of Typhus or Scarlet fever; and sufficiently explained by food, partial disinfection, soiled bed-linen, etc., under conditions of imperfect cleanliness and insufficient ventilation.

In this outbreak 17 houses were affected, in one house 5 cases occurred; in a second, 4 cases (3 fatal); in a third, 3 cases; the other houses had only 1 case each.

The geographical condition that made the sewerage of this district self-contained, also affected the social relationship of the inhabitants; not only was inter-visiting common, but many of those affected were actually relatives.

Thus, of 48 houses in A—— and M—— Street, 7 were affected, and 5 of these were inhabited by relatives.

At No. 32 A—— Street, a small general shop, occurred 4 cases and three deaths; three doors off lived a brother, whose wife and 2 children sickened, 2 other children were removed to a relative at No. 1, where they subsequently sickened; at 23, where a case occurred, lived another relative of 29, and at 111 M—— Street where a case occurred, lived another relative. Visiting amongst these was inevitable, and no doubt, causal. At No. 1 J—— Street lived a woman who acted as General Nurse in the District, her son was amongst the early cases.

At 16 T—— Street, a child of the person who nursed the case at 20 A—— Street, was ill with Enteric fever.

These facts suggest that personal communication had a very large amount of influence in determining the spread of the fever, which rapidly disappeared as soon as the establishment of a correct diagnosis enabled early removal to hospital and proper disinfection to be carried out.

I am, indeed, of opinion that we are indebted to the accuracy and promptness of the bacteriological test, enabling these common-sense measures to be applied, for the rapid suppression of a threatening outbreak, rather than to any measures, however salutary and justifiable in the circumstances, applied to the drainage or sewerage systems.

The question of personal infection in Typhoid fever has lately received considerable attention. Dr. Priestly, of Lambeth, recently\* traced the source and spread of three localised outbreaks, and considers the facts noteworthy and interesting from an etiological point of view, as showing that in all probability typhoid fever spreads by actual contact oftener than is generally supposed. His first group of cases commenced in a woman whose condition was not diagnosed until the fever had run a few weeks of its course; largely owing to this circumstance the disease spread. 1, To a child living in the same house; 2, to two children living in the opposite house, one of whom communicated the disease to a young man who shared the bed with him; and 3, to a woman, a friend of the first patient, who lived two doors away. The second group of cases commenced in a man who sickened with obscure symptoms which did not admit of diagnosis until some four weeks had elapsed. 1, A lodger in the same house became infected; 2, a sister living in a street close by; 3, a friend living in the same street; 4, another friend in the same street, whose daughter subsequently became a victim; and 5, possibly two other persons in the same street. The third group of cases began in a man, who probably died of the disease without its true nature being diagnosed. His clothes were sent to his mother-in-law to be washed; and 1, she became affected, as did also No. 2, his brother-in-law; 3, his sister-in-law; and 4, his wife; all in the same house. A friend's child, 5, living next door became affected through the sister-in-law; and a boy, 6, living in the same street, and who was a schoolmate of the patient's brother-in-law, is thought to have contracted

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\* *British Med. Journal*, Jan. 6, 1900, p. 35.



the infection from the same source. Careful enquiry failed to trace any infection to milk, water, or shell-fish, and by a process of exclusion the spread of the disease must be regarded as due to direct contact from person to person or to indirect contact through infected clothes, food, etc. Dr. Priestly pays a tribute to the assistance which the Widal reaction affords in making a prompt diagnosis of the disease, and in expediting precautionary measures, which otherwise are not undertaken until the disease is clinically recognised, perhaps after several weeks.

### **Laboratory Work in Enteric Fever, 1899.**

The application of the Widal-Grüber test continues to meet with much favour, a point of importance in regard to the patient, whose correct treatment is at once assured, to the Medical Attendant, who is helped out of a trying uncertainty, and to the public whose safety is furthered by recognition of the disease before the end of the first week, and the early assumption of proper control.

During the year the blood of 290 cases was examined for this reaction, of which 143 gave a positive result, and 140 a negative result.

In seven cases the reaction was somewhat indefinite, and a guarded opinion only could be given.

The number of examinations made since 1897 when it was commenced are as follows:—

1897	...	...	...	...	...	254
1898	...	...	...	...	...	127
1899	...	...	...	...	...	290

The total number of cases notified during the year was 219, of which 150, or just three quarters, were submitted to bacteriological examination.

In order to check results, practitioners are invited to send particulars on a letter card as to the subsequent progress of the case, and whether it was confirmatory or not of the bacteriological test. In this way 238 replies were received out of 290 sent out. I have summarised these 238 replies, and of 120 cases giving a clear positive reaction, the existence of Typhoid was in no case disputed.

Some cases of Typhoid Fever in children are so mild that, after some transient temperature, no further characteristic signs manifest themselves, and the patient makes an uninterrupted recovery. In these cases, which are often associated with well marked or severe cases in the same house or district, the Widal reaction gives a definite possible result; and there is little doubt that the initial Fever, which is generally pretty definite, though transient, represents the sum of an abortive attack of Typhoid Fever. Such cases, most frequently observed amongst children,\* would, no doubt, in the absence of bacteriological examination, escape detection, and might thus lead to continuance of an outbreak.

In this connection, one case recorded in Ham Green Hospital is of interest. A girl of 17 was admitted in the S. Philip Group, having "Fever," and giving a characteristic Widal reaction. The Fever soon subsided, and the attack was thenceforth almost unrecognisably mild; but she subsequently passed through three severe and typical relapses, and made a good recovery.

The negative cases submitted for Examination included 13 cases of various forms of Tuberculosis, 11 of Pneumonia, 14 of Influenza, 5 of Appendicitis, 2 of Rheumatic Fever, 2 of Acute Ulcerative Colitis, 4 of Simple Enteritis, 4 of Acute Capillary Bronchitis, 2 of Pleurisy, 4 of Empyæma,

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\* Two of these occurred at Ham Green during the year-- one in a boy of 4, the other in a girl of 9—in the S. Philip Outbreak. Similar cases were recorded in infected houses in the 1897 Milkborne Outbreak. Similar almost unrecognisably mild cases occur during Smallpox outbreaks, and in other diseases, and are frequently responsible for much spread of disease.

1 of Pernicious Anæmia, 1 of Abscess of Broad Ligament, 1 of Abscess near Kidney, 2 of Dysentery, 1 of Malaria, 1 of Endocarditis, 1 of Peritonitis, 1 of Meningitis, 1 of Neuro-myositis, Hypostatic Pneumonia, with renal complications; 1 of Salpingitis, and 2 of simple fœcal accumulation. Two cases of suspected Typhoid in 1 house, in a husband and wife, examined on the same day, both gave definitely negative results in the face of strong suspicion. One proved to be Appendicitis, the other was a case of simple fœcal accumulation. Both recovered. Of the seven doubtful results, 3 proved to be Typhoid, 2 were Tuberculosis, and 1 Acute Pneumonia.

Two cases, giving a definite negative to the test, were stated to have had Clinical Typhoid. Recovery precluded post-mortem confirmation.

### **Measles.**

The deaths from Measles in the enlarged City numbered 38, compared with 309 in 1898, 57 in 1897, with 143 in 1896, 8 in 1895, 116 in 1894, 25 in 1893, 105 in 1892, and 239 in 1891. The mortality, per 100,000, living was 11, compared with a mortality in the 1891 epidemic of 109 per 100,000. These large fluctuations are characteristic of Measles prevalence in large centres of population.

Of the 38 deaths, 36 were of children under 5.

Measles is not notifiable, and its early infectivity and rapid spread appear to preclude the possibility of effectually controlling it by the usual means of Hospital isolation and disinfection, while the enormous bulk of cases during any wide prevalence would render effective Hospital isolation impossible without extraordinarily ample ward accommodation. On the other hand, Measles is undoubtedly a regularly recurring cause of immense mortality, much of which might be prevented by careful nursing during the stage of convalescence; so that Hospital isolation would prove of much indirect service.



On the whole, the control of school attendance would appear to be the most hopeful method of procedure, and in this way heads of schools can most effectually further the efforts of your Authority by giving information of cases, and of families known to be affected. This procedure never appears, however, to be wholly effective.

In the first quarter 6 deaths occurred, 11 in the second, 7 in the third, and 14 in the fourth quarter.

Measles showed signs of recrudescence early in 1900.

### **Whooping Cough.**

The deaths from Whooping Cough in the enlarged City numbered 118, compared with 110 in 1898, 118 in 1897, with 64 in 1896, 45 in 1895, 177 in 1894, 80 in 1893, with 154 in 1892, 53 in 1891, and 201 in 1890.

Of the 118 deaths, 114 were of children under 5.

In the first quarter of the year 74 deaths occurred, 29 in the second, 6 in the third, and 9 in the last quarter of the year.

The disease was most fatal in Bedminster (21), S. George (20), and S. Philip (19).

The mortality in this disease is largely due, as in the case of Measles, to the want of care exercised during the course of the disease, to avoid exposure to inclement wind and weather.

### **Influenza.**

This disease was credited with 119 deaths during 1899, compared with 57 in 1898, 40 in 1897, 19 in 1896, 95 in 1895, 26 in 1894, 68 in 1893, and 45 deaths during 1892.

Influenza was chiefly prevalent during the fourth quarter of the year, and the figures for the four quarters are 26, 15, 3, and 75 respectively.

## TUBERCULOSIS.

### Phthisis (Pulmonary Consumption).

On April 18th, 1899, I presented a Special Report on Tuberculosis to the Health Committee, which was printed and circulated.

The fatality of Pulmonary Phthisis, in comparison with that from the seven principal zymotic diseases, is shown here for ten years:—

	1890	1891	1892	1893	1894	1895	1896	1897*	1898	1899
Phthisis ...	413	382	372	363	332	317	370	302	393	430
Seven Principal Zymotics ...	482	426	461	363	457	268	435	430	851	582

\* In 1897 the City was extended.

Amongst the recommendations contained in this Special Report it was advised that arrangements should be made for the taking of samples of milk, and their examination for tuberculous infected matter, as and when found necessary by the Medical Officer of Health. The importance of this question is shown by the fact that Bristol derives its milk supply from some 154 farms, of which 85 are in Gloucestershire, 67 in Somersetshire, and 2 in Wiltshire.

The Health Committee authorised a systematic examination of the milk from all farms supplying the City, which is being carried out by the inoculation test by Professor Délépine, of Manchester. The complete series of experiments, which will probably take some 18 months for completion, are actively in progress, and should afford accurate and valuable information as to the extent and nature of the danger to be apprehended from our milk supplies in this locality,

It was further recommended that all meat and milk contracts for the Hospitals under the control of the Health Committee be framed upon lines protective against Tuberculosis. This has been carried out in recent contracts.

The disinfection of houses in which a tuberculous patient has resided, together with the bedding, clothing, and other articles capable of retaining the infection, is continued upon request, as in former years; but the arrangement of a system of voluntary notification has had to be postponed in consequence of the pressure of unassisted work of the enlarged City.

The printing and circulation of pamphlets containing simple preventive measures has been continued as for many years past.

### CITY OF BRISTOL.

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#### Laboratory Examinations in Diphtheria and Enteric Fever.

	Diphtheria.	Enteric Fever.	Total.
1895	87	—	87
1896	206	—	206
1897*	379	254	633
1898	390	127	517
1899	485	290	775

\* City enlarged in November, 1897.



Table B. Showing Population, Births, Marriages, and Deaths, and Birth and Death Rates, in Bristol, for the 23 Years, 1877-1899. (All figures revised on 1891 Census.)

	Estimated Population.	Registered Births.	*Marriages in the District of the Bristol Union.	DEATHS.				ANNUAL RATES.				
				Total Deaths at all Ages.	Under 1 Year.	Over 1 and under 5.	Over 60.	In Public Institutions.	Birth Rate per 1000.	Death Rate per 1000.	Infantile Mortality to 1000 Births.	Zymotic Rate.
1877	197,395	7,295	1,199	4,415	1,120	785	990	653	36.9	22.3	153.5	3.3
1878	199,879	7,236	1,159	4,409	1,145	605	1,121	631	36.2	22.0	158.2	2.0
1879	202,400	7,644	1,115	4,496	1,112	715	1,163	607	37.7	22.2	145.4	2.2
1880	204,942	7,193	1,195	4,276	1,040	759	1,036	661	35.1	20.8	144.5	3.0
1881	207,229	7,121	1,103	4,050	900	608	1,084	650	33.8	19.5	126.3	2.2
1882	208,007	6,935	1,107	4,019	988	589	1,045	624	33.3	19.3	142.0	2.3
1883	209,522	6,844	1,073	3,795	917	405	1,057	608	32.6	18.1	133.9	1.1
1884	211,048	6,888	1,090	4,023	1,001	538	1,061	653	32.6	19.0	145.3	1.8
1885	212,586	6,786	974	4,281	1,052	639	1,134	629	31.9	20.1	155.0	2.2
1886	214,134	6,724	949	4,253	1,002	619	1,132	694	31.4	19.8	149.1	2.2
1887	215,694	6,619	956	4,542	996	796	1,244	680	30.6	21.0	150.4	3.0
1888	217,266	6,608	981	3,816	824	432	1,138	710	30.4	17.5	124.6	1.3
1889	218,848	6,694	932	4,021	976	595	1,062	660	30.5	18.3	145.8	2.2
1890	220,442	6,634	1,033	4,532	991	597	1,265	730	30.0	20.5	149.4	2.1
1891	222,049	6,725	937	4,631	972	603	1,371	815	30.3	20.8	144.5	1.7
1892	223,592	6,563	973	4,331	953	634	1,197	776	29.3	19.3	145.2	2.0
1893	225,028	6,788	955	4,241	959	411	1,283	851	30.1	18.8	141.2	1.6
1894	226,578	6,393	920	3,888	848	524	1,077	769	28.8	17.1	148.3	2.0
1895	228,139	6,622	846	4,108	935	414	1,321	837	29.0	18.0	141.1	1.1
1896	230,626	6,537	863	3,960	908	476	1,130	793	27.8	16.8	138.9	1.8
1897	232,242	6,514	884	3,988	949	434	1,195	821	28.0	17.1	145.6	1.8
1898	316,900	9,061	837	5,441	1,491	795	1,455	881	28.5	17.1	164.5	2.6

**1899** | **320,911** | **9,336** | **1,052** || **5844** | **1467** | **567** | **1,781** | **1049** || **29.0** | **18.2** | **157.1** | **1.8**

\* This includes the Registration Sub-Districts of St. Mary Redcliff, Castle Precincts, St. Paul, St. James, and St. Augustine only.

+ The Marriages for 1899 are for the first time given for an area co-extensive with the whole enlarged City.

Table C. Showing Number of Deaths from Zymotic Diseases in Bristol, during the 24 years, 1876—1899.

the 24 years, 1876—1899.																								Enlarged City			
1876	1877	1878	1879	1880	1881	1882	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899				
Small Pox ...	23	...	...	1	...	...	...	...	10	8	13	26	...	...	1†	...	20‡	16×	...	5	1	...	0				
Diphtheria...	11	4	5	6	10	8	13	19	25	28	23	26	15	16	16	38	53	50	34	38	36	44	33				
Erysipelas ...	14	17	12	10	18	14	10	11	10	11	10	21	16	9	12	21	11	8	16	10	5	6	13				
Scarlet F. ...	286	45	36	244	153	75	33	37	21	89	217	45	26	40	37	47	35	16	16	59	18	14	13				
Typhus ...	5	31	2	...	7	10	1	2	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...				
Enteric F. ..	84	101	89	39	52	38	29	40	16	29	23	28	38	33	23	18	26	21	22	20	47	26	35				
Puerperal F.*	..	...	...	...	...	...	..	18	12	8	9	17	11	12	7	25	16	11	8	8	6	11	22				
Measles ...	77	133	53	73	120	54	33	46	159	101	147	61	185	92	239	105	25	116	8	143	57	309	38				
Wh. Cough...	47	239	66	95	38	196	38	99	149	101	124	38	105	201	53	154	80	177	45	64	118	110	118				
Diarrhœa ...	209	117	171	184	82	104	83	132	89	119	117	68	131	96	58	99	125	65	143	106	153	348	345				

\* Previous to 1884, Puerperal Fever was not separated in the Local returns from Puerperal Diseases generally.

† This death occurred in the Nover's Hill Hospital outside the City, and so did not appear in the General Returns.

‡ Of these deaths one occurred in the Nover's Hill Hospital, outside the City, and so did not appear in the General Returns.

× Of these deaths five occurred in the Nover's Hill Hospital, outside the City, and so did not appear in the General Returns.



**D. City of Bristol.**  
**TABLE SHOWING DEATHS FROM SPECIFIED CAUSES AT ALL AGES**  
**AND AT SIX GROUPS OF AGES, DURING THE YEAR 1899.**

Classes.	Causes of Death.	Deaths at certain Age Groups.						All Ages.			Rate per 1000 Living.
		0 to 1	1 to 5	5 to 15	15 to 25	25 to 60	60 up- wards.	M.	F.	Total.	
	<b>ALL CAUSES ... ..</b>	1467	567	206	264	1554	1781	2885	2954	5839	18·21
I.	Small Pox { Vaccinated ... ..	...	...	...	...	...	...	...	...	...	
	Un-Vaccinated ... ..	...	...	...	...	...	...	...	...	...	
	No Statement ... ..	...	...	...	...	...	...	...	...	...	
	Scarlet Fever ... ..	1	11	1	...	...	...	4	9	13	0·04
	Diphtheria ... ..	4	16	4	1	4	...	16	13	29	0·10
	Membranous Croup ... ..	...	2	2	...	...	...	2	2	4	
	Enteric or Typhoid Fever ... ..	...	3	7	10	14	1	27	8	35	0·11
	Continued Fever, Ill-defined Fever ... ..	...	...	...	...	...	...	...	...	...	
	Relapsing Fever ... ..	...	...	...	...	...	...	...	...	...	
	Puerperal Fever ... ..	...	...	...	6	16	...	...	22	22	0·06
	Cholera (Asiatic) ... ..	...	...	...	...	...	...	...	...	...	
	Erysipelas ... ..	4	...	...	1	5	3	6	7	13	0·04
	Measles ... ..	13	23	...	2	...	...	17	21	38	0·11
	Whooping Cough ... ..	42	72	4	...	...	...	54	64	118	0·36
	Influenza ... ..	8	6	2	6	28	69	45	74	119	0·37
	Simple Cholera, Chol: Diarrhœa ... ..	...	...	...	...	...	...	...	...	...	
	Diarrhœa, Dysentery ... ..	275	44	...	1	7	18	186	159	345	1·07
	Veneral Affections ... ..	24	2	...	...	2	...	15	13	28	0·08
	Pyæmia ... ..	1	...	...	...	2	...	2	1	3	0·009
	Cow Pox, Effects of Vaccination ..	...	...	...	...	...	...	...	...	...	
	Other Spec: Feb, or Zymotic Disease ... ..	1	4	...	1	3	...	7	2	9	0·02
II.	Parasitic Diseases ... ..	1	...	...	...	...	...	1	...	1	0·003
III.	Dietic Diseases, Alcoholism ... ..	...	...	...	...	14	...	4	10	14	0·04
IV.	Rheumatic Fever ... ..	...	...	...	2	2	...	3	1	4	
	Rickets ... ..	3	11	1	...	...	...	9	6	15	
	Cancer, Malignant Disease ... ..	...	1	...	4	126	158	117	172	289	0·90
	Tabes Mesenterica ... ..	12	5	...	...	...	...	6	11	17	
	Tubercular Meningitis, Hydrocephalus ... ..	25	28	17	5	3	...	43	35	78	
	Phthisis Pulmonalis ... ..	10	13	20	77	293	17	210	220	430	1·34
	Scrofula, Tuberculosis ... ..	19	22	15	6	19	4	49	36	85	
	Other Constitutional Diseases ... ..	2	1	8	13	47	23	51	43	94	
V.	Premature Birth ... ..	188	...	...	...	...	...	105	83	188	
	Congenital Malformations ... ..	21	...	1	...	...	...	12	10	22	
	Old Age ... ..	...	...	...	...	...	235	102	133	235	0·73
VI.	Inflam: of Brain and Membranes ... ..	8	9	5	...	7	2	13	18	31	2·20
	Apoplexy, Paralysis ... ..	4	8	5	8	125	265	204	211	415	
	Epilepsy ... ..	...	...	2	3	13	5	10	13	23	
	Convulsions ... ..	158	28	...	1	1	...	99	89	188	
	Other Diseases of Nervous System ... ..	7	2	3	3	18	16	24	25	49	
	Diseases of Heart and Circulation ... ..	14	5	23	30	240	326	295	343	638	
	Croup ... ..	...	...	...	...	...	...	...	...	...	
	Bronchitis ... ..	160	69	5	2	112	325	326	347	673	3·65
	Pneumonia ... ..	83	94	18	19	92	79	203	182	385	
	Other Respiratory Diseases ... ..	12	15	3	5	44	35	61	53	114	
	Dentition ... ..	25	9	...	...	...	...	14	20	34	
	Dis: of Stomach and Intestines, Peritonitis ... ..	104	20	12	13	52	46	120	127	247	1·24
	Cirrhosis and other Dis: of Liver ... ..	8	1	...	...	47	22	34	44	78	
	Other Diseases of Digestive System ... ..	12	4	2	6	12	4	17	23	40	
	Diseases of Urinary Organs ... ..	1	2	4	6	72	67	83	69	152	0·47
	Diseases of Reproductive Organs ... ..	2	...	...	...	15	6	2	21	23	
	Other Local Diseases ... ..	23	7	11	17	40	8	44	62	106	
VII.	Accident, Negligence ... ..	11	22	27	15	51	35	108	53	161	0·62
	Suffocation ... ..	9	...	...	...	1	1	7	4	11	
	Homicide ... ..	1	...	1	...	1	...	1	2	3	
	Suicide ... ..	...	...	...	...	21	6	21	6	27	
	Execution ... ..	...	...	...	...	...	...	...	...	...	
VIII.	Marasmus, Atrophy, Debility ... ..	160	7	3	...	...	2	94	78	172	0·60
	Other Ill-defined Causes ... ..	11	1	...	1	5	3	12	9	21	



## CITY OF BRISTOL.

## Infectious Disease (Notification Act,) 1889.

1899 Notifications received during each Quarter of 1899.

Table *a*. (UNCORRECTED, AS RECEIVED)

NOTIFIABLE DISEASE	First Quarter	Second Quarter.	Third Quarter	Fourth Quarter.	Totals of each disease
Small Pox ... ..	...	...	...	...	...
Cholera. Choleraic Diarrhœa ...	...	...	...	...	...
Diphtheria ... ..	63	40	37	66	<b>206</b>
Membranous Croup ...	6	7	1	4	<b>18</b>
Erysipelas ... ..	72	73	60	132	<b>337</b>
Scarlet Fever or Scar- latina ... ..	138	126	162	291	<b>717</b>
Typhus Fever ... ..	...	...	...	...	...
Enteric or Typhoid Fever ... ..	37	27	60	100	<b>224</b>
Relapsing Fever ... ..	...	...	...	...	...
Continued Fever ... ..	1	1	...	...	<b>2</b>
Puerperal Fever ... ..	8	11	7	10	<b>36</b>
Totals in each Quarter	<b>325</b>	<b>285</b>	<b>327</b>	<b>603</b>	<b>1,540</b>

**CITY OF BRISTOL.**  
**Notification and Deaths registered by Sub-Districts during the year 1899.**  
 (CORRECTED.)

Table β.

	Small Pox. CasesDeaths.	Choleraic, Diarrhoea. Cases Deaths.	Diphtheria, Cases Deaths.	Membranous Group. Cases Deaths.	Erysipelas. Cases Deaths.	Scarlet Fever Cases Deaths.	TYPHUS. Cases Deaths.	ENTERIC TYPHOID Cases Deaths.	Relaps- ing.	Continued Cases Deaths.	PUER- PERAL. Cases Deaths.	Total cases in each Sub- District.
Ashley	..		30		20	1	72	13			2	137
Bedminster ..	..		28	2	56	4	130	32			8	256
Clifton ...	...		41		25	1	115	11		2	2	196
Knowle	..		2	3	9	1	39	3				56
Redcliff	..		13		20		16	10				59
St. Augustine	..		23		21		43	18		1		106
St. George ...	...		11	5	78	3	79	31		11	6	215
St. Paul	..		6	1	9		16	12			3	47
St. Philip	..		22	5	70	1	49	56			6	208
Stapleton ...	...		18		10		13	6			3	168
Admitted to Public Insts from outside of Borough				1			3	18				22
Municipal Insts. ...	...		3	1	19	2	4	9				36
Total cases of each disease			197	18	337		697	219		2	36	1506
Total deaths from each disease ..			29	4	13		13	35		0	22	
Percentage of deaths to known cases ...			14.7	22.2	3.8	1.8		15.9		0	61.1	

This Table has been corrected as follows:—

Nine cases notified as Diphtheria, twenty notified as Scarlet Fever, and five notified as Enteric Fever, proved subsequently not to be cases of those diseases, and have been deducted.

Table γ.

NOTIFICATION.

CITY OF BRISTOL.

Particulars as to removal and Disinfection in all Cases Notified during the Year 1899.

	Small Pox.	Choleraic Diarrhoea.	Diphtheria.	Membranous Croup.	Erysipelas.	Scarlatina or Scarlet Fever.	The Fevers known by the following names:—					TOTAL
							Typhus.	Typhoid Enteric.	Relapsing	Continued	Puerperal	
Cases treated in General Hospital, Infirmary, or Children's Hospital ...	...	...	50	5*	16	15†	...	116§	...	...	4	206
Cases treated in Sanitary Authority's Hospitals ... ..	...	...	9	...	...	304†	..	21	...	..	...	334
Cases treated in Guardians' Hospital...	...	...	3	...	18	2	..	2	...	..	...	25
Total treated at Home... ..	...	...	135	13	303	376	..	80	...	2	32	941
Total cases known or notified ...	..	...	197	18	337	697	0	219	0	2	36	1,506
Cases in which disinfection of bedding, clothing, and rooms has been carried out, and necessary precautions taken under the supervision of District Inspector ... ..	...	...	186	18	11	695	...	219	...	2	35	1,166
Cases in which disinfection was carried out to the satisfaction of Medical Attendant or in which Disinfection was unnecessary ... ..	...	...	11	...	326	2	..	...	...	...	1	340

\* One case was admitted from outside the Borough.

† Two Cases admitted from outside Borough.

‡ One case admitted from outside the Borough.

§ Eighteen cases admitted from outside the Borough.



## CITY OF BRISTOL.

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### NOTIFICATION.

**Table δ.— Showing the number of cases of Infectious Disease notified under the Infectious Disease Notification Act, 1889, since its adoption in 1890.**

	1890	1891	1892	1893	1894	1895	1896	1897*	1898	1899
Small Pox ... ..	0	16	0	165	201	4	42	10	2	0
Diphtheria and Membranous Croup	56	70	106	141	128	165	258	205	217	215
Erysipelas ... ..	105	135	196	230	154	195	246	203	263	337
Scarlet Fever ... ..	559	888	1442	1245	485	562	1352	511	382	697
Typhus ... ..	1	0	0	0	0	0	0	0	0	0
Enteric Fever ... ..	122	117	135	122	90	89	110	350	113	219
Continued or Doubtful Fever ...	6	8	3	6	1	1	2	0	0	2
Puerperal Fever ... ..	11	11	34	30	18	16	21	10	18	36

\* Borough enlarged in November, 1897.

COMPARATIVE TABLE—Showing the Estimated Population, Density, Birth-rate, Death-rate, Zymotic-rate, Fever Death Rate, Diarrhoea Death Rate, and Infantile Death Rate of the 18 LARGEST TOWNS OF ENGLAND AND WALES (those having a population of over 200,000); also of EDINBURGH, GLASGOW, DUBLIN, and CARDIFF, for the Year 1899, compared with the same particulars and rates for the group of 33 large towns. *From the Registrar General's Return.*

	Estimated Population, middle of 1899.*	Persons to an acre.	Birth-rate.	Death-rate.	Zymotic rate.	Fever Death-rate.	Diarrhoea Death-rate.	Deaths under 1 year to 1000 Births.
33 Large Towns	11,404,408	34.1	30.2	20.2	2.81	0.22	1.21	181
London ...	4,546,752	60.9	29.4	19.8	2.48	0.18	0.93	167
Liverpool ...	634,212	47.9	35.6	26.4	3.77	0.31	1.87	198
Manchester ..	543,902	42.1	32.6	24.6	3.92	0.14	1.83	206
Birmingham ..	514,956	40.5	34.3	20.8	2.96	0.24	1.67	191
Leeds ...	423,889	19.6	30.6	19.1	2.79	0.17	0.94	171
Sheffield...	361,169	18.4	34.6	22.2	4.39	0.51	1.58	194
<b>Bristol</b> ...	<b>320,911</b>	<b>27.5</b>	<b>29.2</b>	<b>18.2</b>	<b>1.86</b>	<b>0.11</b>	<b>1.11</b>	<b>158</b>
West Ham ...	300,241	63.8	29.7	16.7	3.50	0.26	1.55	197
Nottingham ..	239,384	21.8	28.9	20.0	3.33	0.48	1.68	210
Bradford ...	236,241	21.8	23.4	18.4	2.33	0.20	0.97	181
Hull ...	234,270	26.0	34.3	19.3	3.66	0.18	1.46	175
Newcastle ...	228,625	42.6	31.4	20.6	1.82	0.10	0.75	193
Salford ...	218,244	42.2	33.9	23.8	4.32	0.35	1.97	209
Leicester ...	213,851	24.9	29.4	17.7	3.31	0.14	1.36	195
Edinburgh ...	298,927	33.9	27.6	19.6	2.31	0.16	0.87	147
Glasgow...	733,903	59.6	33.1	21.6	3.19	0.25	1.33	152
Dublin ...	349,594	14.2	30.5	30.2	4.58	0.54	1.38	188
Cardiff ...	185,826	30.6	28.6	15.4	2.06	0.10	0.91	184

\* These Populations are based on the 1891 Census returns.

## COMPARATIVE MORTALITY.

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### 1899—The Thirty-three Great Towns.

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*From the Registrar-General's Returns.*

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*Combined Population.*—11,404,408.

*Births.*—342,294, equal to a birth-rate of 30·2 per 1,000 population.

*Deaths.*—229,730, equal to a death-rate of 20·2 per 1,000 population; this rate was 0·1 per 1,000 below the mean rate for ten years. The general death-rate varied from 15·0 in Croydon to 26·4 in Liverpool. The rate in **Bristol** was **18·2**.

*Infantile Mortality.*—62,231 deaths of infants under one year, = a rate of 181 per 1,000 births, or 11 per 1,000 above the average proportion for ten years. The lowest proportions in the 33 towns were 152 in Huddersfield, 154 in Croydon, **158 in Bristol**, and 159 in Halifax; the highest proportions were 209 in Salford, 210 in Nottingham, 255 in Preston, and 269 in Burnley.

*Principal Zymotic Diseases.*—The mortality from diphtheria, “fever,” and diarrhœa showed an excess in 1899, as compared with the mean rate for 10 years, that from small-pox corresponded with the average, while that from measles, scarlet fever, and whooping-cough was, in each case, below the average. The lowest zymotic rates were 1·5 in Halifax, 1·56 in Croydon, and 1·65 in Derby; the highest zymotic rates were 3·92 in Manchester, 3·93 in Preston, 4·32 in Salford, 4·35 in Burnley, and 4·39 in Sheffield. The zymotic rate in **Bristol** was **1·86**.



*Small-pox.*—145 deaths, compared with 450, 120, 25, 18, and 13 respectively, in the five preceding years, of these 145 deaths, 141 occurred in Hull, 3 in London, and 1 in Liverpool.

*Measles.*—The rate of 0·46 per 1,000 was below the ten years' average of 0·6. The lowest rate were 0·01 in Brighton, 0·02 in Wolverhampton, 0·04 in Norwich, and 0·06 in Cardiff; the highest rates were 0·68 in West Ham 0·78 in Burnley, 0·97 in Salford, and 1·30 in Manchester. The rate in **Bristol** was **0·13**.

*Scarlet Fever* caused a mortality of 0·13 per 1,000 compared with a decennial average of 0·23. The rates in the various towns ranged from 0·02 in Croydon and in Cardiff, 0·03 in Plymouth, **0·04** in **Bristol**, and 0·06 in West Ham, Birmingham, Birkenhead, and Huddersfield, to 0·26 in Liverpool, 0·27 in Halifax, 0·31 in Oldham, 0·45 in Bradford, and 0·67 in Burnley.

*Diphtheria* (excluding "Croup.") The rate was equal to 0·40 per 1,000, compared with a decennial average of 0·32. Excluding London, where the rate was 0·43, the rate in the other great towns averaged 0·38 per 1,000; it ranged from 0·05 in Huddersfield, 0·06 in Sunderland, 0·08 in Derby and in Gateshead, and 0·09 in Bolton, to 0·78 in Leeds, 1·06 in Leicester, 1·28 in Sheffield, and 1·36 in Swansea. The rate in **Bristol** was **0·10**.

*Whooping Cough* accounted for a death rate of 0·38 per 1,000, compared with a decennial average of 0·51. The lowest death rates from this disease were 0·08 in Derby, 0·15 in Brighton, and 0·16 in Sheffield; and the highest 0·62 in Hull, 0·64 in Cardiff, 0·66 in Burnley, and 0·77 in Birkenhead. The rate in **Bristol** was **0·37**.

*Continued Fevers*, namely *Enteric*, caused an aggregate mortality equal to 0·22 per 1,000 or 0·02 above the decennial average. The lowest rates were 0·07 in Croydon and in Plymouth, 0·08 in Swansea, 0·10 in Cardiff and in Newcastle-

upon-Tyne; the highest rates being 0·43 in Birkenhead, 0·48 in Nottingham, 0·51 in Sheffield, and 0·52 in Wolverhampton. The rate in **Bristol** was **0·11**.

*Diarrhoea* caused a mortality equal to a rate of 1·21 per 1,000, this rate was 0·29 per 1,000 above the decennial average. The lowest rates were 0·47 in Halifax, 0·71 in Swansea, 0·74 in Birkenhead, and 0·75 in Newcastle-on-Tyne; the highest rates were 1·83 in Manchester, 1·87 in Liverpool, 1·97 in Salford, and 2·30 in Preston. The rate in **Bristol** was **1·11**.

*Uncertified Causes of Death.* In the 33 towns 1·2 per cent. of deaths were uncertified. No uncertified death was registered either in Croydon or Derby, and the proportion did not exceed 0·2% in Oldham and 0·3% in Plymouth. The highest proportions were 3·1% in Preston, 3·5 in Blackburn, 3·7 in Halifax and 3·8 in Liverpool. The proportion of uncertified deaths in **Bristol** was **0·6%**.

### **Edinburgh, Glasgow, and Dublin.**

In Edinburgh the death rate in 1899 was equal to 19·6 per 1,000, in Glasgow it was 21·6 per 1,000, and in Dublin it was 30·8 per 1,000, against 19·8 in London.

### **Colonial and Foreign Cities.**

In thirty-five of the principal Colonial and Foreign Cities, with an aggregate population of over twenty-six millions, the deaths collectively, equalled a rate of 22·4 per 1,000, living.

In thirty European and American Cities, with an aggregate population of about twenty-three and a half millions, the rate was 19·8 per 1,000. In Paris the rate was 20·2, in Berlin 18·7, in Vienna 20·6, in New York 18·4, against 19·8 in London. Among the other Cities the lowest rates were 14·6 in Chicago, 14·8 in Cincinnati, and 15·3 in Amsterdam; the highest rates were 25·2 in St. Petersburg, 25·4 in Breslau, 26·3 in New Orleans, 27·7 in Trieste, and 28·5 in Moscow.

*Small-pox* caused 143 deaths in Moscow, 113 in S. Louis, 103 in St. Petersburg, 18 in New York, and 12 in Cincinnati.

*Measles* was most fatal in proportion to population in Brussels, Stockholm, St. Petersburg, Vienna, Prague, and Venice.

*Scarlet Fever* in Copenhagen, St. Petersburg, Moscow, Berlin, Breslau, Prague, Buda-Pesth, Trieste, and Chicago.

*Diphtheria* in Stockholm, St. Petersburg, Moscow, Berlin, Vienna, Prague, Trieste, Venice, New York, Chicago, Philadelphia, St. Louis, and Boston.

*Whooping Cough* in Rotterdam, Berlin, Hamburg, and Turin.

"*Fever*" in Paris, St. Petersburg, Buda-Pesth, Rome, Philadelphia, Boston, San Francisco, New Orleans, and Cincinnati.

*Diarrhæal Diseases* in Brussels, Copenhagen, Christiania, S. Petersburg, Moscow, Berlin, Dresden, Breslau, Munich, Trieste, and New Orleans.

Among the Indian Cities the death-rate was equal to 35·0 in Calcutta, 38·1 in Madras, and 69·0 in Bombay; *Small-pox* caused 468 deaths in Bombay, 33 in Madras, and 27 in Calcutta; *Measles* caused 1,885 deaths in Bombay, and 294 in Madras; under the heading "*fever*" 3,278 deaths were classed in Madras, 6,389 in Calcutta, and 20,886 in Bombay, the latter number including 15,850 deaths from *Plague*. The mortality from *Diarrhæal Diseases* was excessive in each of these Indian Cities.

In Cairo and Alexandria the death-rates were respectively 36·4 and 31·2 per 1,000, these high rates being mainly attributable to excessive mortality from *Diarrhæal Diseases*. *Small-pox* caused 66 deaths in Cairo, and 19 in Alexandria. *Measles* caused 598 deaths, and "*fever*" 885 deaths in Cairo.



**City Hospitals, Ham Green, Bristol.**

**FIRST ANNUAL REPORT.**

*To the Health Committee.*

GENTLEMEN,

These Hospitals were opened in July, 1899, and on Monday, July 24th, the first patient was admitted.

The numbers increased steadily week by week until at the beginning of the third week in October we reached our full complement:—76. Since the week ending the 14th October, the numbers have only twice been below 70, have been as high as 90 on several occasions, and have averaged per day 78·26.

The Hospital was built to accommodate 76 adult patients, and at this computation a very liberal cubic and floor space was allowed.

As, however, 90 per cent. of the admissions are children, it enabled us to nurse 23 patients in a block built for 17, so that our total accommodation is now 104, instead of 76.

One block has been retained for the reception of Typhoid Fever cases, the rest being devoted to Scarlet Fever, whilst Diphtheria patients are nursed in the Isolation Block.

The Admissions were as under:—

Table I.							
<i>Scarlet Fever.</i>		<i>Typhoid.</i>		<i>Diphtheria.</i>		<i>Doubtful.</i>	
Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
106	88	13	8	2	2	5	2
Totals—194		21		4		7	
226.							

Total admissions from July 24th to December 30th—226.

Owing to increase in the number of cases requiring admission, some of the patients in a convalescent state were transferred to Novers Hill Hospital (which is free of small-pox). The first batch went on November 23rd, and whenever the numbers subsequently rose to between 85 and 90 others were transferred.

In all 49 were thus dealt with, and were subsequently discharged from Novers Hill Hospital.

Table shewing Discharges, Transfers and Deaths, also Patients remaining under treatment in Hospital at end of year, 1899 :—

Table II.				
	Discharged.	Transferred.	Died.	Remaining in Hospital.
Scarlet Fever ...	78	49	5	62
Enteric Fever ...	3	0	0	18
Diphtheria ...	3	0	0	1
Doubtful ...	5	0	0	2
<b>Totals ..</b>	<b>89</b>	<b>49</b>	<b>5</b>	<b>83</b>
<b>226.</b>				

“Doubtful” cases are those admitted and requiring isolation in the opinion of the certifying medical man, or those cases considered doubtful on admission. Such cases are placed either in the Isolation Block or else in the small admission ward attached to each block. If, after due observation, they show no evidence of disease, they are discharged.

The case mortality of Scarlet Fever patients was 2·57 ; five deaths, all under five years, occurring out of 194. No deaths resulted from Typhoid Fever or Diphtheria.

The admissions in the various months were as under :—

Table III.						
			Scarlet Fever.	Enteric.	Diphtheria.	Doubtful.
July	...	...	8	0	0	1
August	...	...	17	0	0	0
September	...	...	21	2	0	2
October	...	...	57	4	1	2
November	...	...	40	6	2	1
December	...	...	51	9	1	1
Totals	...	...	194	21	4	7
226.						

The following table shews the average daily number of patients in the Hospitals :—

FOR THE WEEK ENDING—

<i>July</i>		<i>August</i>				<i>September</i>				
29th.		5th.	12th	19th.	26th.	2nd.	9th.	16th.	23rd.	30th
6·2		9·5	11·4	13·1	20·6	24·3	25·9	25·3	32·0	40·0

<i>October</i>				<i>November</i>				<i>December</i>				
7th.	14th.	21st.	28th.	4th	11th.	18th.	25th.	2nd.	9th.	16th.	23rd.	30th.
44·4	57·0	70·0	75·4	76·4	77·7	84·3	86·0	75·0	81·4	83·3	75·4	77·0

The next table shews the age and sex of the patients on admission.

It will be seen from this that 77 per cent. of Scarlet Fever cases were under 10 years, and 90 per cent. under 15 years. Males were slightly in excess of females.



Table V.

Age.	Scarlet Fever.				Enteric Fever.			Diphtheria.			Doubtful,		
	Male.	Female.	Total.	Per-centage.	Male.	Female.	Total.	Male.	Female.	Total.	Male.	Female.	Total.
Under 1 year ...	...	...	...	...	.	.	...	...	...	...	.	...	...
Between 1—2 years ...	8	2	10	5.0	...	...	...	...	...	...	...	...	...
“ 2—3 years .	4	3	7	3.5	...	...	...	...	...	...	...	...	...
“ 3—4 years ...	10	6	16	8.0	...	...	...	...	...	...	..	...	...
“ 4—5 years ...	15	22	37	18.5	...	...	...	...	...	...	...	...	...
55													
Total under 5 years .	37	33	70	35.0	2	...	2	...	...	...	2	...	2
Between 6—10 years ..	50	35	85	42.5	4	7	11	1	1	2	1	...	1
“ 11—15 years .	13	13	26	13.0	...	3	3	...	...	...	1	2	3
“ 16—20 years ..	4	3	7	3.5	3	1	4	...	...	...	...	...	...
Over 20 years ...	2	4	6	3.0	1	...	1	1	1	2	1	...	1
Totals ...	106	88	194	...	10	11	21	2	2	4	5	2	7

The causes of death were as under :—

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Table VI.

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1. *Æt.* 2 years. Scarlet Fever. Pyæmia.
2. „ 4 years. Scarlet Fever. Cervical Angina. Sapræmia.
3. „ 3 years. Scarlet Fever. Suppurative Meningitis following Double Otorrhœa.
4. „ 4 years. Scarlet Fever. Cervical Angina. Œdema of Larynx. (Tracheotomy). Sapræmia.
5. „ 4 years. Scarlet Fever. Acute Tubal Nephritis.

In each case the cause of death was verified by autopsy.

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No. 1. Died fourteen days after admission. Blood and all the organs invaded by Staphylococci as shewn by Bacteriological examination. Antistreptococcus serum (70 cc.) had no effect.

No. 2. Died four days after admission, of septic intoxication from sloughing pharynx. Antistreptococcus serum given.

No. 3. Recovered from severe initial attack, but in the third week developed Meningitis from Otorrhœa and died in three days.

No. 4. Died seventeen days after admission, having developed Œdema of larynx which extended from sloughing pharynx. Serum (50 cc.) given.

No. 5. Nephritis supervened five days after admission, running very rapid course, patient dying in less than twenty-four hours. Temp. 107·5.

The following table shews the complications which supervened on Scarlet Fever.

Where one patient had several complications, all are included under their respective headings.

The fatal cases are not included here.

Table VI'

1.	Acute Nephritis	...	...	...	6
2.	Pyæmia	...	...	...	1
3.	Otorrhœa	...	...	...	8
4.	Broncho Pneumonia	...	...	...	1
5.	Œdema of Larynx	...	...	...	1
6.	Very severe Throats	...	...	...	7
7.	Adventitious Rashes	...	...	...	5
8.	Endocarditis	...	...	...	3
9.	Persistent Tachycardia	...	...	...	2
10.	Arthropathies	...	...	...	5

*Remarks* (1). Three of these six were very mild, lasting only a few days, the others were more severe. None became chronic.

(2). Recovered in sixteen weeks. Bacteriological diagnosis. Multiple Abscesses. Antistreptococcus serum (70 cc.)

(7). Transient Macular Rashes (2).  
Fugitive Erythematous Rashes (2).  
Urticarial (1).

(8). In one case the disease was present in a chronic condition. One developed permanent valvular mischief, while the third suffered no permanent ill effects.

(9). Two cases maintained pulse rate of 120 for many weeks without evidence of Endocarditis; both were discharged in this condition, treatment having been ineffectual.

(10). In two the wrist joint was affected, in two the ankles, and in the fifth the elbow. One resembled Acute Rheumatism, the rest did not.



Table VIII.

Shows the time after admission when the Scarlet Fever patients were first allowed to get up.

A large number of Hospitals insist on a minimum of three weeks in bed for every patient, irrespective of the severity of his condition.

Days. 7—10.	Days. 11—14.	Days. 15—18.	Days. 19—21.	Days. 22—24.	Days. 25—28.	Above 28 days.
13 per cent.	20 per cent.	24 per cent.	10 per cent.	10 per cent.	10 per cent.	13 per cent.

Table IX.

Shows the length of stay in Hospital of those patients who were ultimately discharged. Those transferred are not reckoned.

The average length of stay was about 50 days, *i.e.*, 7 weeks. The majority of those discharged before the six weeks were either convalescent on admission or had had indefinite attacks.

Days : 35-42 or 5-6 weeks.	Days : 43-49 or 6-7 weeks.	Days : 50-56 or 7-8 weeks.	Days : 57-63 or 8-9 weeks.
20 per cent.	20 per cent.	25 per cent.	19 per cent.
Days : 64-70 or 9-10 weeks.	Days : 71-77 or 10-11 weeks.	Days : 78-84 or 11-12 weeks.	Over 12 weeks.
11 per cent.	1 per cent.	2 per cent.	2 per cent.

### **Return Cases.**

Two cases only were stated to be return cases.

In one, Scarlet Fever followed two weeks after discharge of patients' sister, who had developed Otorrhœa after leaving the Hospital.

In the second case, the rash followed six days after discharge of patient's sister from this Hospital; source not known.

### **Typhoid Fever.**

Of the twenty-one cases of Enteric Fever admitted eight were severe, and thirteen moderate or mild. All re-acted to Widal's test. No case is removed from the City until after the positive application of this test.

Two had one relapse; one had two relapses; whilst one had three. Two had Scarlet Fever, one of these undoubtedly contracted it outside, whilst in the second case it was doubtful. One had mumps (contracted outside). One had several adventitious rashes, one of which was erythematous, one macular, and on a third occasion she had a rash partaking of both these characters. One man had double tibial periostitis, and another had single tibial periostitis. The other cases were uncomplicated.

### **Diphtheria.**

Only four cases were admitted. The Klebs-Loëffler bacillus was present in every case.

No case is admitted to the Diphtheria Ward until after a positive bacteriological examination.

All had Diphtheria-antitoxin; general urticaria followed in one, and general urticario-erythematous rash in another.

All were uncomplicated, and all recovered.

### General.

I would beg to call attention to the necessity which exists for warming the lavatories and passages in the ward blocks.

The wards themselves are heated by double-ended centrally placed stoves, and in the winter months, by dint of great energy, can be maintained at a fairly constant level.

The lavatories, which are placed at the two extremes of the Block, together with the cross ventilating passage (now used as a cloakroom) are not in any way warmed.

That a patient convalescing from Scarlet Fever should leave a general ward at  $60^{\circ}$  *Fahr.* and expose himself in a lavatory at a temperature of  $32^{\circ}$  *Fahr.* and sometimes lower is, in my opinion, highly injudicious; I am only surprised that the consequences have not been more serious than they have.

Either some means of artificially heating these places should be provided, or else dressing-gowns or warm wraps should be placed in each ward, the latter suggestion being the less satisfactory way out of the difficulty.

There is a point concerning the Isolation Block to which it would be well to call attention.

It is divided into four wards only, each providing ample room for three persons. As an isolating pavilion it defeats its own end, as, although there is accommodation for twelve people, one can only really *isolate* four cases, one in each ward.

I hope that in the scheme for hospital extension it will be found convenient to build Isolation wards on a more economical principle, making each ward only large enough for one person, and building a large number of such wards.



### **Effect of Removal.**

The Fever Hospital is about four miles from the middle of the city, and the *route* is along a very hilly road.

The ambulances are of the Brougham type with solid rubber tyres.

It was thought at first that there might be some danger in bringing patients this distance during the acute stage of Scarlet Fever, and this question has, therefore, received careful consideration.

The chief evidence is the comparison between the condition of the patient on his admission and his condition later in the day or on the day following.

Statistics can scarcely help much, but the temperature charts have all been watched, with a view to finding out whether the condition of the patient was obviously affected by removal.

### **Scarlet Fever.**

In about 65 per cent. of cases of Scarlet Fever the temperature on admission was higher than that recorded at any subsequent taking during the uncomplicated stage of the disease.

This may be due to one of two causes:—either the journey in the ambulance produced a rise of temperature, which subsided with rest in bed, or else the fact that the appearance of the rash—which usually coincides with the height of the disease—is generally the signal for removal to a Fever Hospital.

That the former is at least a factor is shewn by the fact that cases by no means always come in in the height of the disease, and further, some cases which on admission register 103° *Fahr.* drop that evening, perhaps, to 99° *Fahr.*, and do not subsequently rise higher.

In about 30 per cent. of cases the temperature either continues to rise after admission or else falls at first, to rise higher during the next few days.

Speaking generally, no case has been actually endangered by removal, though nearly all the severest cases are affected slightly by it, whilst headache and vomiting during transit or on admission, where these symptoms have not been present previously, are occasionally met with.

### **Typhoid Fever.**

Cases are not removed after the second week of the disease, if at all severe.

One patient had slight hæmorrhage for the first time on admission, and several of the severest cases are undoubtedly somewhat exhausted, but no permanent bad effects have been noticed.

This is evidenced by the fact, that up to the time of writing (May 20), 50 Typhoid patients have been admitted, 49 of which have recovered, and the one death was in no way hastened by the transit.

### **Diphtheria.**

In one case, death—inevitable anyhow—was probably hastened by the journey, the child dying of cardiac failure about two hours after admission.

No other patient has been visibly affected by removal.

F. PERCIVAL MACKIE, M.R.C.S., L.R.C.P.,

*Resident Medical Officer*

## Bristol City Hospitals.

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### MEDICAL ATTENDANT'S REPORT FOR THE STATISTICAL YEAR, ENDING DECEMBER 30TH, 1899.

#### Novers Hill Hospital\*—Scarlet Fever.

Remaining from 1898	...	...	39	} ... 196
Admitted	...	...	108	
„ Convalescent from Ham Green Hospital	...	...	49	
Discharged cured	...	..	164	} ... 196
Died	...	...	3	
Remaining	...	..	29	

#### St. Philip's Marsh Probationary Hospital.

Admitted one case, which proved to be Scarlet Fever, and was transferred to the Novers Hill Hospital.

#### Clift House Temporary Hospital (*now closed*).

Admitted three cases of Diphtheria, and discharged them cured in due course.

Of the number of Scarlet Fever cases admitted to the Novers Hill Hospital on notification five proved not to be that disease; three of them contracted the disease in the Hospital; one proved to be measles, and one German measles; five were doubtful as to being Scarlet Fever.

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\* This Hospital is reserved for Small-pox during any prevalence of that disease; but, in the absence of Small-pox, is used for convalescent Scarlet Fever in relief of Ham Green, where the accommodation is yet very exiguous.



Complications and sequelæ in patients admitted during the year :—

Albuminuria ... ..	5	Membranous Croup	
„ Convulsions	1	(Tracheotomy) ...	1
Conjunctivitis...	1	Pneumonia ... ..	2
Glandular Abscesses ...	3	Return case ... ..	1
Impetigo ... ..	5	Rheumatism ... ..	2
Otorrhœa ... ..	8	Rhinitis or Rhinorrhœa	6
„ followed by		Relapses or Secondary	
Otitis media, Menin-		Rash ... ..	6
gitis and Pyæmia ...	1	Whooping Cough ...	1

G. C. PAULI, M.R.C.S., L.R.C.P.,

*Medical Attendant.*

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## Part II.

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### **Report of the Chief Inspector of Nuisances.**

PUBLIC HEALTH DEPARTMENT,  
40 PRINCE STREET.

**1899.**

*January, 1900.*

TO THE BRISTOL URBAN SANITARY AUTHORITY.

GENTLEMEN,

I have the honour of submitting the following brief report with summary showing the amount of work effected in this department during the past year.

1,025 complaints and applications were received and recorded at this office as against 1,096 last year, these were all promptly investigated, and wherever any nuisance was found, the necessary steps were at once taken for its abatement. Many of the complaints were found to be of a very trivial nature, and at 378 or 36·8 per cent. of the places complained of no nuisance whatever was found to exist, a very large number of the applications were from persons who contemplated removing to other houses, but before signing any agreement of tenancy desired to know the state of the sanitary arrangements of the house they proposed taking, in this way many much needed sanitary improvements have been effected.

1,539 cases of infectious disease were notified to the Medical Officer of Health, and all necessary enquiries relative thereto made by the District Inspectors and the results duly reported to him, these enquiries necessitated 2,444 visits. 951 infected houses were disinfected, and 29,816 articles of clothing, bedding, &c. were removed therefrom and disinfected by super-heated steam and

returned to the houses, 149 similar articles were at the owners' request destroyed, these numbers do not include the clothing of the patients taken to Ham Green Hospital, which are all disinfected at the Hospital. The Washington Lyons Steam Disinfector has as usual done its work admirably.

The informal notices served by the various Inspectors have again been very successful, so that only 63 formal or statutory notices were required, the prosecutions for non-compliance with these were about on an average with previous years, full particulars of which are appended.

**Houses Let in Lodgings** now number 410, or 4 less than last year (the decrease being caused by the demolition of the 4 in question). I am pleased to say that the annual May notices for lime-washing, cleansing, &c., were all so promptly complied with, that no further action was necessary in any case.

**Factory and Workshops Acts.** The work in connection with these Acts has again been carried out without friction of any kind either with the owners, occupiers, or H. M. Inspectors of Factories (with whom we work most amicably). A reference to the appended summary will show at a glance what work has been accomplished in this branch of the department, this however does not mean all the *good* accomplished, as the constant visits of the Inspector at irregular intervals keeps those who have charge of sanitary conveniences and other matters at those places well up in habits of cleanliness. There are now over 1,600 workshops registered in Greater Bristol.

### **Housing of the Working Classes Act, 1890.**

During the year 35 houses have been dealt with under this Act, viz.:—29 closed as unfit for human habitation, without appealing to the Justices for a closing order, 2 made habitable, and 4 are now under repair, and will very soon be fit for habitation. In addition to the above 142 houses all occupied by the working classes in various



parts of the City (chiefly central) have been demolished for the extension of business premises, thus the old and insanitary houses are being slowly but surely swept away. Any houses demolished for street improvements are not included in the above totals.

**Slaughter Houses** now number 124, or 2 more than last year, this is accounted for by the fact that in 2 cases in one of the newly added districts it was found that 2 licenses were existing for the premises, which were originally separate, but are now merged into one, so that practically the number is the same as last year, although the licenses number 2 more. All have received the usual attention from the two Inspectors who are most energetic in their work, but I can only repeat what I have said many times before, that it is quite impossible for them to exercise that necessary supervision over so many, and widely scattered Slaughter Houses, so essential for the prevention of a possible occasional slaughtering of diseased or unsound animals. I am, however, afraid that public abattoirs are yet a long way off.

The following is the number of carcasses of animals, &c., destroyed as unfit for food under the supervision of the Inspectors, viz. :—

The Carcasses of 12 Beasts.

„ 43 Sheep.

„ 71 Pigs,

„ 5 Calves.

Also, 1,061 lbs. of Meat from Butchers' Shops, also

294 Packages of Fish.

220 „ of Fruit.

140 „ of Vegetables.

1 Case of Tinned Meat and

46 Rabbits,

### **Dairies, Cowsheds, and Milkshops.**

The Dairies are now all in good condition, special attention having been again given to the floors, in several cases these have been relaid with some impervious material, whilst the walls have been lined with white glazed tiles or cement.

The Cowsheds, especially those in the outlying districts have greatly improved during the year, special attention being given to insure increased light, better ventilation, and a good water supply, whilst the half-yearly lime-washing, and the constant removal of manure is insisted on in all cases, so that all are now in fairly good condition, leaving little to be desired.

The Milkshops have as usual been a continual worry, as they are constantly changing hands, and many small shopkeepers and others start selling milk only to find that the regulations are so stringent that they very soon give up the selling, rather than comply with the Inspectors' requirements. Special attention is in all cases given to the drainage of the premises and cleanliness of the places, and utensils in which milk is kept or stored, this however is only secured by constant supervision.

There are now nearly 1,400 dairies, cowsheds, and milkshops registered in Bristol.

**Common Lodging Houses** now number 37, or 3 less than last year, which have been demolished for various purposes, chiefly to make way for business premises. These 37 houses contain 187 rooms, which will accommodate 827 single men, 21 single women, and 67 married couples. Inspector Dimond has with his usual energy so well looked after the houses, that no prosecution for contravening the bye-laws has been necessary. By a recent decision of the Lord Chief Justice, Salvation Army Shelters are now to be considered as Common Lodging Houses, and amenable to the bye-laws made

for their regulation, and steps are being taken so that the one on Tower Hill (the only one in Bristol) will shortly be registered as such, in doing this, every endeavour will be made not to interfere unduly with the good work carried on for some years past by this institution.

I have again to thank the members of the Health Committee for giving me the opportunity of attending the Congress of the Sanitary Institute at Southampton, in August last, which was both interesting and instructive.

My thanks are also due and are hereby tendered to the City Engineer and his staff for much valuable information and assistance.

I am, Gentlemen,

Your obedient Servant,

JAMES W. KIRLEY,

*Chief Inspector of Nuisances.*



# Summary of Nuisances abated and work done by, and under the Supervision of the Inspectors in the Health Department during the year ending December 31st, 1899.

*Prepared by the Chief Inspector of Nuisances.*

NATURE OF WORK.	By District Inspectors.	By Inspector of Dairies, &c.	By Inspectors of Workshops &c.	By Inspectors of Slaughter Houses, &c.	By Inspector of Common Lodging Houses.	By Inspector of Bake Houses.	TOTALS.
Visits and Re-visits ... ..	34254	2499	4494	16837	211	1046	59341
Drains entirely relaid, &c. ... ..	541	6	61	5	1	7	621
Do. partially relaid ... ..	796	14	72	7		7	896
W.C.'s fitted with new pans, &c. ... ..	1141	17	156	12		13	1339
Do. cleansed and amended ... ..	251	6	46	2			305
Do. fitted with flushing appliances ..	222	6	73	4			305
Additional W.C. accommodation provided ... ..	31		44				75
Dilapidated Houses repaired, &c. ..	398				5	32	435
Defective Roofs repaired ... ..	236	6	21	2			265
Sinks and Yard Gullies trapped ... ..	2221	65	206	22		15	2529
Yards paved by Owners ... ..	866	48	144	3		4	1065
Cesspools abolished ... ..	72						72
Offensive Deposits removed ... ..	254	42	16	22		7	341
Keeping of Pigs, &c., prohibited ... ..	271						271
Smoke Nuisances abated ... ..	5					2	7
Offensive Trades do. ... ..	30						30
Polluted Wells closed ... ..	44	2		3			49
Company's Water provided to houses ..	126	5	11	8			150
Nuisances from overcrowding abated ..	27		7				34
Dairies, &c., Cleansed and Improved ..		136					136
Workrooms and Passages, limewashed &c. ... ..			226				226
Do. better ventilation secured ... ..			20				20
Rooms at Tenement Houses limewashed, &c. ... ..	1464						1464
Passages and Stairs at do. do. ... ..	394						394
Slaughter Houses limewashed ... ..				27			27
Do. Paving repaired ... ..				13			13
Limewashing, &c., secured ... ..		52			78	86	216
Other Nuisances abated ... ..	473	27	14	9	7	22	552
<b>Totals ... ..</b>	<b>9863</b>	<b>432</b>	<b>1117</b>	<b>139</b>	<b>91</b>	<b>195</b>	<b>11837</b>

No. of Complaints received and attended to ... ..	1025
„ Offensive trades visited ... ..	119
„ Smoke observations taken ... ..	259
„ Times smoke test applied to drains ... ..	1806
„ Visits to houses <i>re</i> infectious disease ... ..	2444
„ Houses disinfected after such disease ... ..	951
„ Articles of Bedding, &c., removed and disinfected ...	29816
„ Do. Do. and burnt ... ..	149
Total number of Articles dealt with ... ..	29965
No. of Notices served informal ... ..	2393
„ „ „ formal ... ..	63
Half-yearly Cleansing Notices served, Common Lodging Houses	85
Annual „ „ „ Tenement Houses ... ..	410
Half-yearly „ „ „ Bakehouses ..	108
„ „ „ „ Slaughter Houses ... ..	227
„ „ „ „ Dairies, &c. ... ..	90
No. of Slaughter-houses on Register ... ..	124
„ Common Lodging Houses 37 (containing 187 rooms, certified to accommodate 982. The rooms contain 827 single beds for men, 24 single beds for women, and 67 double beds separated) ... ..	37
„ Dairies, Cowsheds and Milkshops ... ..	1400
„ Houses let in Lodgings ... ..	410
„ Workshops ... ..	1600
„ Bakehouses ... ..	434

J. W. KIRLEY,  
*Chief Inspector of Nuisances.*

**Summary of Work effected in the Health Department during  
Twelve Years—1888-99.**

*Prepared by the Chief Inspector of Nuisances.*

TABLE SHOWING THE NUMBER OF NUISANCES ABATED AND OTHER  
WORK DONE IN EACH YEAR SINCE 1888.

	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899
Number of Nuisances abated ... ..	3139	3672	5600	5101	7485	8403	7564	7366	8800	8049	12118	11837
Polluted Wells closed	18	48	35	14	14	26	27	32	14	14	46	49
Houses supplied with Co.'s Water ...	36	113	68	24	37	223	79	85	68	76	151	150
Houses disinfected ...	403	264	558	879	1351	1815	931	651	1389	855	682	951
Articles of bedding, &c., disinfected ...	23233	14462	20523	31112	36722	46959	36274	24320	49226	33847	25852	29965

## **Factory and Workshops Acts, 1878, 1883, 1895.**

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### **Inspection of Bakehouses and Premises attached, during 1899.**

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The number of Bakehouses now existing is 434, of which 414 were found in operation during the year. 47 of these are underground, bakehouses, the most of which have been in use many years, and some of them are unsuitable for the purpose as viewed in the light of modern sanitary requirements.

They require much general attention, and whenever possible improvements are obtained, especially in respect of lighting and ventilation.

The remainder are buildings of all characters, many ranging from very good, to others that are poorly constructed and ill-adapted to the purpose.

Various repairs and improvements have been obtained in respect of the latter places to the number of 32, and the general condition of Bakehouses has been thereby improved.

The necessity for improved sanitary conditions being obtained, is constantly being pressed upon masters and employés where necessary. 1,046 inspections of these places were made during the year, with the result that 168 various sanitary defects or contraventions of the regulations were discovered and dealt with.

The number is 10 less than in the previous year.

Again the chief cause of complaint was want of prompt attention to the lime-washing regulation and general cleaning.

These cases numbered 108, an increase of 9 compared with the previous year.

Full particulars of defects noted, notices given, and work done are given in table form, 1 and 2 attached.

S. DIMOND,

*Inspector of Bakehouses.*



Table 1.      Table of Bakehouse Inspection for the Year.						
1899.      With particulars of Condition, Contraventions, Action taken, and Results.						
		Total number of inspections and visits		...	...	1,046
Number of Bakehouse premises found to be in very good or passable order and condition					...	878
Ditto ditto		ditto		not in satisfactory condition from one or more	...	168
of the undermentioned defects		...	...	...	...	
					1,046	1,046
PARTICULARS OF DEFECTS AND CONTRAVENTIONS.						
Total.	Nature of Defects, etc.		Total Notices.	Description of Notices Complied With.		
168	Contraventions of lime-washing regulations and general cleaning		108	Informal Notices given to abate nuisances, effect repairs, or comply with Regulations		
	Bakehouse premises with defective drainage		14	Various Written Notices served and complied with		
	Ditto with defective floors, roofs, or dilapidations		32	...		
	Ditto with defective ventilation		0	Notices running at end of year and since complied with		
	Ditto Manure accumulations		7	...		
	Ditto Polluted wells		1	...		
	Yards Paved		4	...		
	Smoke nuisances dealt with		2	...		
168			168	160		
S. O. DIMOND, Inspector.						

**TABLE II.**  
**Showing Defects found and remedied in each**  
**year since Bakehouse Inspection was instituted.**

YEAR.	PARTICULARS.	TOTALS.
1884	Total contraventions in respect of cleansing, lime - washing, defective drains, repairs, and defective ventilation.	342
1885	Ditto	244
1886	Ditto	96
1887	Ditto	132
1888	Ditto	69
1889	Ditto	65
1890	Ditto	89
1891	Ditto	80
1892	Ditto	71
1893	Ditto	36
1894	Ditto	57
1895	Ditto	74
1896	Ditto	51
1897	Ditto	140
1898	Ditto	178
1899	Ditto	168

**Particulars of Cases taken before the Justices  
1899. during the year.**

DATE.	NAME.	OFFENCE.	RESULT.
Jan. 6th	Mrs. E. Bale	Nuisance from a defective drain, &c., at 2, Marlborough Street	Ordered to abate the Nuisance and to pay costs.
Jan. 6th	Miss Hall	Nuisance from keeping a number of Fowls at 39, Leigh Road, South.	Ditto.
Jan. 6th.	Mr. T Smith	A number of Gipsy Caravans, &c., without Sanitary Conveniences	Ditto.
Mar. 10th	Mrs. Baber	A Cowshed not in accordance with the Dairies and Cowshed Order.	Use of Cowshed discontinued, ordered to pay costs.
Mar. 10th	Mr. W. Stephens	A Cowshed without a supply of water.	Water supply provided, ordered to pay costs.
May 19th	Mr. R. Sully	Exposing unsound Oranges for Sale.	Fined 5/- and costs.
June 30th	Mr. H. Packer	Exposing the Carcase of a Diseased Cow for sale.	Fined £10 and costs.
Oct. 27th	Mr. T. Hill	Exposing unsound Fish for sale.	Fined £3 and costs.
Oct. 27th	Mr. W. Maggs	Nuisance from keeping a Donkey in kitchen.	Ordered to abate the nuisance and to pay the costs.
Dec 22nd	Mr. Clayton	Not removing Manure in accordance with regulations.	Fined 10/- and costs.

NOTE.—Two other parties were summoned, but having meanwhile done what was required, the cases were withdrawn on payment of costs.



**1899-1900.****Baths and Wash-houses.**

The six establishments at  
 The "Victoria," Clifton.  
 The "Royal," Kingsdown.  
 The Weir,  
 The Mayor's Paddock, New Cut,  
 Jacob's Wells,  
 Rennison's,

return the following figures for the year's work :

Year ended 25th March, 1900.	No. of Bathers. Swimming Baths.	Private Baths.	Women Washing Clothes.
"Victoria," Clifton (Baths only)	18,655	...	...
'Royal' Kingsdown (Baths only)	28,233	679	...
Broad Weir	52,760	43,119	27,222
Mayor's Paddock, New Cut	40,869	32,955	21,989
Jacob's Wells (Baths only)	46,871	22,600	...
Rennison's (Swimming Bath only)	37,397	...	...
Total ...	224,785	99,353	49,211

Particulars supplied by Mr. KANE.

*The City Analyst, Mr. F. Wallis Stoddart, F.I.C., F.C.S. has kindly supplied the following returns:—*

“FOOD AND DRUGS ACTS.”

**SUMMARY OF RETURNS FOR 1899.**

Articles.	Analysed.	Condemned.
Milk ... ..	262	19
Skimmed Milk ...	1	0
Butter ... ..	305	19
Margarine ... ..	12	0
Pepper ... ..	2	0
Vinegar ... ..	6	1
Golden Syrup ...	4	1
Jam ... ..	4	0
Flour ... ..	4	0
Cheese ... ..	4	0
Miscellaneous ...	6	0
	610	40

The working of these Acts in the City of Bristol is now entrusted to an Inspector acting under the Watch Committee, and is not administered by the Health Committee.

The samples of Margarine, though purchased as such and returned as genuine, really represent infringements of the Margarine Act.

## PART III.

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### **Meteorological Observations in Bristol.**

(Kindly supplied by H. H. HARDING, Esq., F. R. Met. Soc.,  
Fishponds).

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#### **1899.**

*January.*—Until the 23rd a month of almost constant wind and rain. On this date, however, after three days of continuous gales from the south and south-west, came a welcome change. The wind became northerly, the barometer rose and temperature fell. The next few days were delightfully fine, with cloudless skies, and sharp frosts at night; but unsettled conditions had again set in by the close of the month.

Mean temperature (max. and min.) for the month was 42·2 degrees, about 3 degrees warmer than usual. The extremes of temperature were 56·1 degrees on the 8th, and 23·6 degrees on the 26th—a range of 32·5 degrees. The warmest day was the 21st, with a mean temperature of 50·1 degrees, and the coldest the 26th, with a mean of 32·1 degrees. There were 8 frosty nights.

The rainfall of the month was 5·17 inches at Clifton\* and 4·29 inches at Fishponds, falling upon 22 days; these amounts being much in excess of the average.

Mean atmospheric pressure was deficient. Highest reading at 8 a.m. was 30·695 inches on the 26th, and the lowest 28·911 inches on the 2nd.

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\* Rainfall values for Clifton 215 feet above sea-level; for Fishponds 0 feet.



*February.*—A month of great contrasts, the first half being most unsettled and stormy, with some remarkably heavy thunderstorms for the time of year on the 7th, 12th and 13th. This was succeeded during the next fortnight by beautifully fine weather, the sun shining brightly in the daytime, while the nights were seasonably cold.

Mean temperature was 42·7 degrees, just over 2 degrees in excess of the average. The extremes were 58·8 degrees on the 10th and 23·2 degrees on the 28th—a range of 35·6 degrees. The warmest day was the 10th, with a mean of 54·1 degrees, and the coldest the 4th, with a mean of 30·5 degrees. There were 10 frosty nights.

The total rainfall was 3·91 inches at Clifton\* and 3·73 inches at Fishponds, falling upon 11 days. The departure from the average showed an excess of slightly over  $1\frac{1}{2}$  inches. The whole fall occurred during the first half of the month.

Mean atmospheric pressure was deficient. Highest reading at 8 a.m. was 30·710 inches on 28th, and the lowest 29·128 inches on 13th.

A snowfall occurred on the night of the 4th, but it was quickly succeeded by rain.

*March.*—With the exception of an extraordinarily cold period from the 18th to the 25th, a warm and pleasant month. This cold snap, however, brought the mean temperature below that of either of the preceding winter months.

Although the coldest month of the winter the mean temperature of 41·9 degrees is slightly in excess of the average. If it had not been for the cold snap already referred to, the mean would have been several degrees higher, for, during this period of a week's duration the cold was of mid-winter intensity, the mean being as low as 33·5

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\* Rainfall values for Clifton 215 feet above sea-level; for Fishponds 160 feet.

degrees. The warmest day occurred on the 31st, with a mean of 53 degrees, and the coldest on the 23rd, mean 30·4 degrees. There were 16 frosty nights.

Total rainfall varied from a fall of 1·17 inches at Clifton to 0·89 inches at Fishponds ; the number of rainy days respectively being 8 and 7. A snowfall occurred on the 21st.

Mean atmospheric pressure was excessive. Maximum reading at 8 a.m. was 30·713 inches on the 1st, and minimum 29·064 inches on 9th.

*April.*—A typical month, with frequent, although as a rule not heavy rainfall. One very heavy fall, however, occurred between midnight and noon on the 21st, the total reaching an inch.

The total rainfall amounted to 3·46 inches on 24 days at Clifton, and 3·16 inches on 19 days at Fishponds ; the departure from the average being an excess of about an inch.

Mean temperature was 47 degrees, just about normal. The maximum was 61 degrees on the 27th, and the minimum 31 degrees on 17th. The warmest day occurred on the 28th, with a mean of 54·2 degrees, and the coldest on the 17th, mean 41 degrees. One frosty night.

Mean atmospheric pressure was below the average. The highest reading at 8 a.m. was 30·259 inches on 5th, and the lowest 29·024 inches on 14th.

*May.*—Upon the whole a fine month, although by no means a favourable one for the time of year, owing to frequent cold temperatures. No rainfall whatever before the 12th or after the 24th

Total rainfall 2·27 inches on 12 days at Clifton, and 1·88 inches on 10 days at Fishponds ; the fall being slightly deficient.

Mean temperature was 51·4 degrees, about 1 degree below normal. The maximum was 71·4 degrees on 31st, and the minimum 32 degrees on 5th. The warmest day was the 31st, with a mean temperature of 57·7 degrees, and the coldest the 4th with a mean of 44 degrees. One frosty night.

Mean pressure was 30·078 inches, being about one-tenth of an inch in excess of normal. Maximum recorded at 8 a.m. was 30·516 inches on 28th, and minimum 29·596 inches on 15th.

*June.*—The fine dry weather which prevailed during the last week of May continued until more than half of the month had passed away. During the daytime clear skies and hot sunshine were the rule, but at night the thermometer occasionally fell rather low for the time of year. The last ten days or so were rather unsettled, but it was not until the night of the 30th that any considerable rainfall occurred locally.

The total rainfall was 1·54 inches at Clifton, and 1·57 inches at Fishponds, falling on 5 days. These falls show a deficiency of just under an inch.

Mean temperature was 61 degrees, about 2 in excess of normal. On 15 days the maximum exceeded 70 degrees, reaching 80 on the 5th and 6th. The greatest temperature was 80·2 degrees on 6th, and the least 39 degrees on 14th. The warmest day was the 7th, with a mean of 68·5 degrees, and the coldest the 14th, mean 51·6 degrees.

Pressure was in excess to the 17th and again from the 24th to 27th; the mean of 30·078 inches for the month being in excess of the average. The greatest pressure at 8 a.m. was 30·434 inches on 8th, and the least 29·304 inches on 20th.

*July.*—During the first day or so very inclement weather prevailed, the month being ushered in by a moderate westerly gale, with heavy rainfall, thunder and lightning.



This was succeeded by a couple of very cold days, but by the close of the first week conditions had become fine and warm, and the remainder of the month was brilliantly fine and hot.

Total rainfall was 0·68 inches at Clifton, and 0·98 inches at Fishponds; falling upon 8 and 7 days respectively. These totals show a deficiency of over 2 inches.

Mean temperature of the month was 64·2 degrees, over 3 degrees above normal; maximum was 87·4 degrees on 20th, and the minimum 46·5 degrees on 5th. The warmest day occurred on the 20th, with a mean temperature of 73·9 degrees, and the coldest on the 2nd, with a mean of 55·7 degrees. Maxima were consistently over 70 degrees (excepting three days) from 5th to close of month, 80 degrees was exceeded on six.

Mean pressure was 30·090, being considerably in excess of normal. Greatest pressure at 8 a.m. 30·440 inches on 31st, and least 29·520 inches on 1st.

*August.*—A month of brilliantly fine and almost tropical weather until within a day or two of its close, when conditions became rainy and cooler. On Bank-Holiday, the 7th, however, heavy, but somewhat local, thunderstorms prevailed.

The mean temperature of 66·7 degrees is over 6 degrees above normal; the month being the hottest on record locally. Maximum was 87·8 degrees on the 24th, and the minimum 48·6 degrees on 22nd. With the exception of the 28th, 30th, and 31st, the thermometer daily exceeded 70 degrees, and on 15 occasions 80 degrees. The warmest day was the 24th, with a mean of 72·4 degrees, and the coldest the 31st, mean 61·1 degrees.

Mean pressure was 30·108 inches, this being much above the average of the month. The maximum at 8 a.m. was 30·426 inches on 1st, and the minimum 29·814 inches on 29th.

*September.*—Warm and fine until well into the third week, when, as last year, a sudden change to autumnal conditions set in. From then until the close a constant succession of strong westerly winds prevailed, accompanied by decided falls of rain.

The rainfall for the month was 3·79 inches on 15 days at Clifton, and 3·11 inches on 14 days at Fishponds. The total at Clifton shows an excess of 0·41 inch.

The mean temperature was 58·3 degrees, this being about 2 degrees above normal. Maximum, 81·3 degrees, occurred on the 5th, and the minimum, 39 degrees, on 28th. The warmest day was the 5th, with a mean of 70·5 degrees, and the coldest the 28th; mean 47·7 degrees.

Atmospheric pressure was deficient. The mean, locally, was 29·891 inches; the extreme range at 8 a.m. being from a maximum of 30·242 inches on the 11th to a minimum of 29·234 inches on the 31st.

*October.*—This month commenced with a very gloomy outlook, but after a couple of considerable falls of rain on the 3rd and 4th the weather completely cleared up. From then until the 25th, beautifully fine, although at times somewhat foggy, weather prevailed. Heavy rains occurred during the last week.

The mean temperature of 49·6 degrees is in excess of the average. The maximum was 66·1 degrees on the 17th, and the minimum 31·1 degrees on 21st. The warmest day occurred on the 27th, with a mean temperature of 58·1 degrees; and the coldest on the 21st, mean 43·5 degrees. One frosty night.

Rainfall, locally, varied from 3·69 inches at Clifton to 3·22 inches at Fishponds, falling on 10 days, being just about the average.

Mean pressure was 30·062 inches, being much above normal. Maximum at 8 a.m. was 30·417 inches on the 8th, and minimum 29·294 inches on 1st.

*November.*—Most unsettled and stormy during the first 10 days, but from then to the close remarkably fine, no measurable rain falling after the 12th. The month was remarkable for its consistently high temperature, the maximum rarely failing to reach 50 degrees.

The total rainfall was just about the average; the amount at Clifton being 3·12 inches falling on 10 days, and at Fishponds 2·78 inches on 11 days.

Mean temperature was as high as 48·5 degrees, over 4 degrees above normal; this excess being the greatest on record for the month, with the single exception of 1881. The maximum was 63·3 degrees on the 4th, and the minimum 23·8 degrees on 19th. The warmest day occurred on the 5th, with a mean of 55 degrees, and the coldest on the 19th, mean 33 degrees. One frosty night.

Mean pressure was 30·183 inches, this showing an excess of over a quarter of an inch. Maximum at 8 a.m. 30·711 inches on 18th, and minimum 29·401 inches on 8th.

*December.*—The mild weather of November continued during the first day or so, but a period of cold set in on the 8th, which gave some very low minima in the succeeding week. The frost did not last long however, but the last fortnight was cold and changeable, stormy weather prevailing on the closing days.

The total rainfall varied much in the district. At Clifton\* it amounted to 3·41 inches, falling on 22 days, and at Fishponds to 2·73 inches on 21 days. Some snow fell on the 11th, 12th and 13th.

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For the rainfall figures and means at Clifton given in the preceding notes I am indebted to the courtesy of Mr. R. F. STURGE, F. R. Met. Soc.



Mean temperature was 36·6 degrees, 3 degrees below normal. The maximum of 56·7 degrees occurred on the 6th, and the minimum 15·6 degrees on the 15th. The warmest day was the 6th, with a mean of 52·2 degrees, and the coldest the 14th, mean 22·4 degrees. Fifteen frosty nights.

Mean pressure at 8 a.m. was 29·890. It was generally in excess until the last few days, when several exceedingly deficient readings brought the mean below normal. The maximum at 8 a.m. was 30·519 inches on 3rd, and the minimum 28·521 inches on 29th.

Taking the year as a whole it will long be remembered for the unprecedented heat and sunshine of its summer months. In spite of this, however, its mean temperature was below that of 1898.

H. H. HARDING, F. R. Met. Soc.

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Rainfall of 1899.			
WEEK. ENDING.	RAIN INCHES.	WEEK ENDING.	RAIN INCHES.
January 7	·860	July 8	·108
„ 14	2·190	„ 15	·426
„ 21	2·440	„ 22	·646
„ 28	·110	„ 29	·006
February 4	·980	August 5	·004
„ 11	1·620	„ 12	·377
„ 18	1·790	„ 19	—
„ 25	nil	„ 26	—
March 4	·170	Sept. 2	1·829
„ 11	·420	„ 9	·195
„ 18	nil	„ 16	·170
„ 25	·602	„ 23	·601
April 1	·252	„ 30	2·400
„ 8	1·155	October 7	1·399
„ 15	1·200	„ 14	·092
„ 22	·906	„ 21	—
„ 29	·666	„ 28	1·468
May 6	·009	Nov. 4	2·214
„ 13	·100	„ 11	1·727
„ 20	1·270	„ 18	nil
„ 27	·745	„ 25	·020
June 3	nil	Dec. 2	nil
„ 10	nil	„ 9	·672
„ 17	nil	„ 16	·680
„ 24	·455	„ 23	·157
July 1	1·127	„ 30	1·921

D. RINTOUL.

**Rainfall, 1899.**

Month.	Rainfall in Inches.	Average of 17 years.	Departure from Average.	No. of days on which .01 inches or more rain fell.
January ...	5·17	2·556	+ 2·614	22
February ...	3·91	2·119	+ 1·791	11
March ...	1·17	2·162	- 0·992	8
April .. ...	3·46	2·117	+ 1·343	24
May ... ..	2·27	1·994	+ 0·276	27
June ... ..	1·54	2·098	- 0·558	5
July ... ...	0·68	3·153	- 2·473	8
August ...	1·56	3·125	- 1·565	12
September ...	3·79	3·178	+ 0·612	15
October ...	3·69	3·912	- 0·222	10
November ...	3·12	3·312	- 0·192	10
December ...	3·41	3·291	+ 0·119	22
	33·77	33·017	+ 0·753	174

D. RINTOUL.



Meteorology for the 52 Weeks, ending December 30th, 1899.

Height above Mean Sea Level—250 feet.

CLIFTON COLLEGE.

1899.		BAROMETRIC PRESSURE at 32° and Sea Level				Mean Temperature	Highest Mean Daily Temperature	Lowest Mean Daily Temperature	Max. Temperature in Shade	Min. Temperature at ft above ground	Min. Temperature on ground	Mean Daily Range of Thermometer	Greatest Daily Range of Thermometer	Smallest Daily Range of Thermometer	Mean Humidity	Grains of Vapour in a cubic ft. of air	Prevalent Wind.
Week Ending		Mean	Highest	Lowest													
		Inches	Inches	Inches													
Jan.	7	29.81	30.41	29.05	42.69	39.15	52.6	35.2	31.8	10.4	14.4	5.5	90	2.83			W.
"	14	29.63	30.03	29.41	46.27	44.40	53.6	36.7	33.3	10.6	15.4	3.5	88	3.08			S.W.
"	21	29.77	30.12	29.42	48.37	46.20	54.9	38.3	30.8	9.9	15.8	4.9	81	3.17			S.W.
"	28	30.30	30.77	29.35	37.72	32.90	50.1	26.4	23.9	8.8	16.4	2.8	83	2.12			N.E.
Feb.	4	29.90	30.18	29.55	34.77	31.35	42.5	25.9	24.0	8.3	11.6	3.6	92	2.09			N.E.
"	11	29.59	29.83	29.49	47.51	36.55	59.5	32.5	28.0	10.7	18.9	5.6	87	3.21			N.
"	18	29.70	30.09	29.19	46.37	42.75	56.1	35.4	33.0	10.9	15.8	3.3	87	3.08			Variable.
"	25	30.32	30.43	30.20	43.21	38.45	52.6	30.2	28.3	12.2	20.1	4.6	83	2.44			E.
March	4	30.50	30.80	30.00	39.03	36.00	53.1	26.6	24.8	18.4	24.9	13.4	77	2.11			Variable.
"	11	29.90	30.33	29.17	41.51	37.10	54.9	28.5	26.9	15.5	20.8	12.1	85	2.46			W'ly.
"	18	30.52	30.68	30.23	47.56	39.70	61.0	34.3	31.8	14.5	23.7	10.8	89	2.96			Variable.
"	25	30.01	30.20	29.83	34.85	32.05	48.2	24.7	23.9	14.9	19.0	10.2	78	1.86			N.W.
April	1	30.14	30.34	30.02	50.17	46.70	57.2	39.3	34.0	10.7	14.8	6.6	89	3.58			Variable.
"	8	30.01	30.32	29.28	49.60	45.10	56.6	40.8	36.9	8.7	9.8	6.1	86	3.44			W'ly.
"	15	29.62	29.97	29.15	45.71	42.80	52.6	36.0	33.9	10.9	13.6	6.2	85	3.00			W.
"	22	30.09	30.30	29.79	44.70	42.55	55.6	34.3	31.8	15.8	19.8	9.6	77	2.60			Variable.
"	29	29.85	30.23	29.60	50.34	46.30	59.7	40.5	36.9	9.4	19.2	5.1	78	3.37			Variable.
May	6	30.19	30.48	29.95	49.39	44.40	62.3	35.7	33.5	14.8	22.2	9.1	70	2.83			N.E.
"	13	30.02	30.41	29.85	52.15	47.60	66.5	36.9	36.2	17.5	24.6	7.9	86	3.74			Variable.
"	20	29.72	30.01	29.45	53.59	51.40	64.0	45.8	43.9	10.7	13.4	4.7	84	3.82			W.
"	27	30.02	30.37	29.68	52.59	47.60	63.0	39.9	38.0	11.2	18.1	8.3	82	3.56			W.
June	3	30.34	30.53	30.15	58.50	51.45	76.2	39.9	38.5	23.8	26.3	22.7	68	3.64			Variable.
"	10	30.35	30.46	30.23	64.88	57.30	82.8	45.4	47.3	23.5	26.6	19.6	72	4.42			Variable.
"	17	30.14	30.26	30.04	63.26	55.90	81.2	45.4	—	22.1	26.4	13.0	71	4.31			Variable.
"	24	29.71	30.10	29.29	60.30	55.30	72.2	47.5	—	13.3	19.9	7.1	76	4.33			S'ly.

Meteorology for the 52 Weeks—Continued.

Height above Mean Sea Level—250 feet.

1899.		BAROMETRIC PRESSURE at 32° and Sea Level			Mean Temperature	Highest Mean Daily Temperature	Lowest Mean Daily Temperature	Max. Temperature in Shade	Min. Temperature at 4ft above ground	Min. Temperature on ground	Mean Daily Range of Thermometer	Greatest Daily Range of Thermometer	Smallest Daily Range of Thermometer	Mean Humidity	Grains of Vapour in a cubic ft. of air	Prevalent Wind.
Week Ending		Mean	Highest	Lowest												
		Inches	Inches	Inches												
July	1	30·03	30·32	29·55	62·41	66·60	57·50	75·3	53·4	—	12·9	18·6	5·4	74	4·53	S.W.
"	8	30·13	30·31	29·68	61·04	65·60	55·85	74·3	50·3	—	13·5	17·6	8·3	75	4·35	W'y.
"	15	30·02	30·19	29·76	65·59	68·90	63·30	76·7	55·3	—	14·7	16·0	10·5	74	4·89	W'y.
"	22	30·06	30·25	20·93	68·72	74·60	64·40	86·2	54·9	—	19·2	23·2	14·5	68	4·90	Variable.
"	29	30·20	30·40	29·88	65·14	67·90	62·50	78·2	53·3	—	15·5	24·9	6·9	71	4·57	N.W'y. & W'y.
August	5	30·23	30·44	29·98	70·67	71·50	69·80	85·7	57·3	—	24·5	28·4	22·4	69	5·05	Variable.
"	12	30·15	30·36	29·96	66·80	69·40	64·35	79·1	53·1	—	21·4	25·3	15·1	74	4·69	E'y. & N.E.
"	19	30·26	30·46	30·06	68·48	71·95	66·80	83·0	56·5	—	19·0	25·0	13·5	69	4·79	N.W. & E.
"	26	30·20	30·35	29·99	70·85	74·15	68·85	87·5	55·5	—	24·1	28·0	18·8	57	4·68	E. & S.E.
Sept.	2	29·85	29·91	29·81	64·34	69·10	62·35	74·4	56·3	—	10·4	12·6	7·9	77	4·66	W'y.
"	9	30·06	30·30	29·92	65·92	71·60	60·10	80·0	52·4	—	13·3	16·8	8·4	77	4·42	S. & S.W'y.
"	16	30·09	30·26	29·63	61·44	62·85	58·30	70·9	50·3	—	12·2	16·2	9·5	77	4·42	W. & N.W'y.
"	23	29·87	30·08	29·75	56·77	62·20	53·10	69·4	44·1	—	11·4	18·0	8·5	68	3·46	W. & S.W'y.
"	30	29·67	30·05	29·23	52·26	56·35	48·55	61·5	41·6	40·3	10·8	14·1	9·1	81	3·43	S.W'y.
October	7	29·90	30·26	29·21	49·86	52·90	46·60	60·4	38·3	36·8	12·1	17·6	1·9	87	3·33	E'y. & S.W'y.
"	14	30·12	30·44	29·60	49·57	54·05	45·65	61·5	37·0	35·6	17·1	20·5	12·6	88	3·05	E'y. & S.W'y.
"	21	30·24	30·44	29·90	48·17	54·50	42·85	63·5	34·6	33·5	17·9	22·6	13·8	87	2·89	S.E. E'y.
"	28	30·15	30·44	29·77	52·47	58·25	46·45	61·5	34·9	36·5	12·1	23·1	2·8	92	4·02	Variable.
Nov.	4	29·75	30·08	29·52	52·45	56·70	48·10	61·5	42·0	38·7	10·8	16·7	6·0	84	3·78	S. & S.W'y.
"	11	29·79	30·12	29·43	51·55	54·30	50·15	56·9	47·0	42·4	7·4	9·3	5·2	83	3·57	S. S.W'y.
"	18	30·54	30·75	30·20	47·55	51·25	40·15	54·7	35·2	33·3	8·2	18·1	2·1	85	3·64	E'y. & S.E'y.
"	25	30·44	30·54	30·33	45·03	49·90	36·10	51·8	29·1	29·3	8·9	21·0	3·8	83	3·10	S.W'y.
Dec.	2	30·42	30·54	30·16	47·52	50·15	41·55	55·1	36·2	33·8	8·6	14·1	3·3	82	3·08	S.W.W'y.
"	9	30·12	30·57	29·67	42·65	52·55	31·65	57·1	28·9	27·8	8·7	17·7	1·7	84	2·79	S.W'y.
"	16	29·89	30·24	29·55	30·07	34·35	24·05	43·3	19·4	18·9	11·5	23·4	3·3	83	1·68	E'y. & S.E'y.
"	23	30·18	30·35	30·00	35·48	40·95	30·05	46·7	25·6	25·4	6·6	11·5	3·0	85	2·06	E'y.
"	30	29·33	30·09	28·54	39·20	42·45	35·75	48·7	26·2	26·9	13·3	21·4	2·8	88	2·49	S.W'y.





## 90

### Antitubercular Death Rate

NOTIFICATIONS RECEIVED DURING THE YEAR BY SUB-DISTRICTS AND AGE GROUPS.[illegible][illegible]

The average age at Death of Persons aged 60 years and upwards was 72 years and 10 months. Births of Illegitimate Children 256. Deaths of Illegitimate Children 111.  
Average Death Rate for 10 Years, 18'40. Death Rate for last year, 17'17.



K<sup>3</sup> 3.

(A) TABLE OF DEATHS during the Year 1899, in the Urban Sanitary District of Bristol, classified according to DISEASES, AGES, and LOCALITIES.

Mortality from all causes, at subjoined ages.								Mortality from subjoined causes, distinguishing Deaths of Children under 5 years of Age.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Names of Localities adopted for the purpose of these Statistics; public institutions being shown as separate localities. (Columns for Population and Births are in Table B.)	At all ages.	Under 1 year.	1 and under 5	5 and under 15	15 and under 25	25 and under 65	65 and upwards	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
																														Smallpox.	Scarlatina.	Diphtheria	Membranous Croup.	Fevers.				Typhus.	Enteric or Typhoid	Continued	Relapsing.	Puerperal.	Cholera.	Erysipelas.	Measles.	Whooping Cough.	Diarrhoea and Dysentery.	Rheumatic Fever.	Phthisis.	Bronchitis, Pneumonia, and Pleurisy.	Heart Disease.	English Cholera.	Injuries.	All other Diseases.	TOTAL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				</





K<sup>2</sup>11(B). Table of **Population, Births, and of New CASES of Infectious Sickness**, coming to the knowledge of the Medical Officer of Health, during the year 1899, in the Urban Sanitary District of Bristol; classified according to **DISEASES, AGES, and LOCALITIES**.

Names of Localities adopted for the purpose of these Statistics; Public Institutions being shown as separate localities.	Population at all Ages.		Registered Births	New Cases of Sickness in each locality coming to the knowledge of the Medical Officer of Health.													Number of such Cases Removed from their Homes in the several localities for treatment in Isolation Hospital.													
	Census, 1891. (b)	Estimated to middle of 1899.		Aged under 5 or over 5. (d)	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6	7	8	9	10	11	12	13
					Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fever.					Typhus.	Erysipelas.	Small Pox.	Scarlatina.	Diphtheria.	Membranous Croup.	Fever.					Typhus.	Erysipelas.				
									Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.							Enteric or Typhoid.	Continued.	Relapsing.	Puerperal.	Cholera.			Erysipelas.			
(a)																														
Ashley ... ..	*24,042	38,921	880	Under 5		16	8								4				2	4	1									
				5 upwds.		56	22			13				2	16				18	3			6							
Bedminster H H H H ...	*45,627	53,914	2010	Under 5		68	8	2							6				19	4			1							
				5 upwds.		42	20	1		32				8	50				41	1			21				3			
Clifton ... ..	*44,736	46,869	770	Under 5		28	9								3				16	3										
				5 upwds.		87	32			11				2	22				33	4			7				1			
Kuowle ... ..		8,346	339	Under 5		3	1	2							2				2		1									
				5 upwds.		36	1	1		3					7				20		1		2							
Redcliff H ... ..	*14,887	15,964	372	Under 5		5	7								1				3	3										
				5 upwds.		11	6			10					19				3	4			8				3			
St. Augustine H H ...	*21,626	20,941	461	Under 5		8	19								2				5	15							1			
				5 upwds.		35	4			18				1	19				22	2			15			1		5		
St. George ... ..		48,155	1783	Under 5		23	4	5							6				6									1		
				5 upwds.		56	7			31				11	72				22	4			13					3		
St. Paul ... ..	*19,036	17,342	449	Under 5		1	1			1									1	1			1							
				5 upwds.		15	5	1		11				3	9				10	3	1		7			1		3		
St. Philip H ... ..	*51,624	52,909	1656	Under 5		15	11	3		5					5				4	5			5					1		
				5 upwds.		34	11	2		51				6	65				17	1			35			1		5		
Stapleton H ... ..		17,650	530	Under 5		41	5												22	1										
				5 upwds.		90	13			6				3	10				48	2			3			1		1		
Bristol General Hospital ...	Admitted from outside of Borough.			Under 5																										
				5 upwds.			1			7													7							
Bristol Royal Infirmary ...				Under 5																										
				5 upwds.						11														11						
Children's Hospital ..	Including cases admitted from outside of Borough.			Under 5																										
				5 upwds.		1		1											1		1									
Small Pox Hospital...				Under 5																										
				5 upwds.																										
Fever Hospital ...				Under 5																										
				5 upwds.		3				2									3											
Stapleton Workhouse ...				Under 5		1									1				1											
				5 upwds.						2					13								2					12		
Eastville Workhouse ...			86	Under 5		2													2											
				5 upwds.			2			1										2			1							
Lunatic Asylum ... ..				Under 5																										
				5 upwds.						4					5								3					5		
Totals...		320,911	9336	Under 5		185	73	12		6					30				83	36	2		7				3			
				5 upwds.		512	124	6		213				36	307				238	26	3		141			4		41		

Notification of Infectious Disease has been compulsory in Bristol since February 12th, 1890. Only those Diseases Scheduled in the Act are at present Notifiable. The Isolation Hospitals used by the Sick of the District are:—

NAME OF HOSPITAL.	DISEASES ISOLATED.	DISTRICT WHERE SITUATED.
1.—City Hospitals ... ..	Small Pox or (Scarlet Fever Convalescents when not occupied by Small Pox.)	Novers Hill, Bedminster.
2.—City Hospitals ... ..	Scarlet Fever, Enteric Fever, Diphtheria ... ..	Ham Green, Bedminster.
3.—Bristol Guardians' Hospital †	... ..	Stapleton.
4.—Stapleton Fever Hospital ... ..	Erysipelas from Workhouse ... ..	Lent to Guardians.
5.—Children's Hospital ... ..	Scarlet Fever, Erysipelas ... ..	St. Augustine, Bristol.
6.—Bristol General Hospital ... ..	Enteric Fever ... ..	Partly in St. Mary Redcliff, and partly in Bedminster.
7.—Royal Infirmary ... ..	Ditto ... ..	St. Augustine, Bristol.
8.—Clift House (closed) ... ..	Closed at present. ... ..	Bedminster.

Diphtheria is, as a rule, only admitted into Public Institutions in cases where operation is required: this is still necessary, owing to the distance of Ham Green from the City.

\* Since 1891, both before and after the Extension Act, 1897, many alterations have taken place in the area of these Districts, some being enlarged, others reduced, and in some cases a portion of one District added to another, so that these populations cannot be given except approximately. For particulars of these alterations see Table A on page 6.

† The City Hospitals now receive all cases of Scarlet Fever, Enteric Fever, Diphtheria or Small Pox for the Guardians, at an inclusive payment of £300 per annum.





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